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# The Personnel Journal

*Continuing the Journal of Personnel Research*

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Suggestion Systems Compared —*Z. Clark Dickinson*

A Summer in the Ford Works —*Chen-nan Li*

Does It Pay to Change Jobs?—*Harry D. Kitson and Noel Keys*

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Do Teachers Improve With Experience? —*J. E. Bathurst*

Book Reviews News Notes Current Periodicals

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# The Personnel Journal

THE PERSONNEL JOURNAL publishes original investigations in the applied sciences that contribute to knowledge and effective direction of people at work.

THE PERSONNEL JOURNAL is published for the Personnel Research Federation whose object is "the furtherance of research activities pertaining to personnel in industry, commerce, education, and government, and other fields wherever such researches are conducted in the spirit and with the methods of science."

THE PERSONNEL JOURNAL renders a service not only in centralizing information about personnel research, but also furnishes a continuous accumulation of authoritative material in this field. Significant contributions by specialists in the biological and medical sciences, psychologists, psychiatrists, engineers, and economists, have been published.

Successful personnel administration brings about effective and satisfying adjustments between men and their occupations. It demands judgment based on knowledge of the conditions under which people work productively and happily. It is increasingly important for the administrator to know the methods and results of such scientific studies. To make them currently available is one of the functions of THE PERSONNEL JOURNAL.


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# Influence of Illumination on Accident Rate[1]

By Walter N. Polakov, *New York*

*Mr. Polakov brings out the importance of proper illumination, and gives many instances where modernization of illumination brought decreases in accidents and increases in production. He stresses the fact that intensity of illumination cannot be considered apart from the kind of light. Fine detail work does not demand brilliant illumination,—a soft white light of moderate intensity proves far more satisfactory and prevents eye fatigue. An artificial light of spectral value approximating sunlight will reduce accidents, increase production, reduce spoilage, and prevent unnecessary eyestrain.*

FRANCIS BACON is credited with the story telling that in the Year of Our Lord 1432 there arose a grievous quarrel among the brethren over the number of teeth in the mouth of a horse. "For thirteen days the disputation raged without ceasing. All ancient books and chronicles were fetched out, and wonderful and ponderous erudition, such as was never before heard of in this region was made manifest. At the beginning of the fourteenth day, a youthful friar of goodly bearing asked his learned superiors for permission to add a word, and straight away, to the wonderment of the disputants whose deep wisdom he sore vexed, he beseeched them to unband in a manner coarse and unheard-of, and to look in the open mouth of a horse and find the answer to their question."

I fear that my address today may vex you in somewhat a similar manner, for, after diligently studying the books written by the erudites, both on the subject of artificial illumination and pertaining to the matter of accidents, I gained the sad impression that the thing for us to do is to follow the impertinent advice of the good friar in the story.

I modestly hope that my fate will be unlike that of the friar, for at his suggestion "the dignity of the assembly being grievously hurt, they waxed exceedingly wroth; and joining in a mighty uproar, they flew upon him and smote him hip and thigh and cast him out forthwith. After many days more of grievous strife the Dove of Peace sat on the assembly, and they as one man, declaring the problem to be an everlasting mystery because of a grievous dearth of historial and theological evidence thereof, so ordered the same writ down."

[1] Read at the Autumn conference of the Personnel Research Federation, November 17, 1927.

### HARM FROM POOR ILLUMINATION

All authorities apparently agree in the general statement that "Insufficient light is a common contributing cause of accidents."

" . . . . It is common knowledge that the number of work accidents increase during the winter months, also that the larger proportion occur during the hours of diminished daylight. These accidents are increased at these times because of insufficient artificial light." (George Alvin Cowee, *Practical Safety Methods and Devices*, page 380.)

Another authority asserts that "The National Safety Council mentions an analysis of 91,000 accidents which showed that about 24 per cent were due wholly or in part to poor lighting and there are available other data more or less convincing." (Lewis A. de Blois, *Industrial Safety Organization*, page 246.)

Mr. R. E. Simpson, the engineer of the Traveler's Insurance Company, Hartford, Conn., addressing the illuminating Engineering Society in 1925, likewise asserted that, "We have ample evidence, and presumably are therefore agreed, that faulty illumination is the cause of accidents."

Dr. Andrew F. McBride, Commissioner of Labor, State of New Jersey, concurs with the above, asserting that, "improper illumination and defective vision are today the major factors in *one out of every eight* accidents." It was his observation that proper lighting intensities in our industries contribute largely to the reduction of industrial accidents. Certainly the testimony of a number of our large manufacturers to the effect that accidents have been reduced from 50 per cent to 75 per cent, as the result of lighting their premises in accordance with modern practices, should be sufficient proof of the economy behind the movement. "The records of tripping and falling over objects maintains a very high point in the percentage, and a close study of the plants where this class of accident is high generally shows poor lighting conditions."

There are, however, no accurate and exhaustive statistics on the subject to enable the industrial managers and safety workers to direct their efforts wisely without doing some more research.

### SIGHT AND SEEING

The process of seeing is of course a joint phenomenon. One must have not only eyes to see, but also the light to make the object visible. It is obvious, therefore, that poor vision may be equally due to poor illumination as to defective eyesight. It is significant that today fully 66 per cent of our workers have defective vision, according to Dr. McBride. This means that of the 40,000,000 or more men and women who are gainfully employed in the United States, upward of 25,000,000 suffer from some form of defective vision, and many of those so afflicted owe their defects to the conditions under which they are employed. This defective vision is capable of correction, for it is poor lighting that principally impairs vision. Dr. McBride says that, "Losing of eye-

sight from this cause is gradual and it may take the individual years to become aware of it."

Percy W. Cobb, of the Lighting Research Laboratory, Nela Park, Cleveland, Ohio, quotes the recent examination of the eyes of 2,449 employees in the City Hall and General Post Office, New York City, which shows that 73½ per cent of these persons have refractive defects of the eyes, while Ferree and Rand, of the Department of Psychology, Bryn Mawr College, quote some data of the Ophthalmic Survey of the employees of New York City Post Offices, made by the office of Industrial Hygiene of the U. S. Public Health Service. "This survey was made on 4,786 employees working in the general Post Office and in the old, or City Hall Post Office. Among the results obtained, the following may be noted.

1. An increase of intensity of illumination produced an increase in the speed of work. In mail sorting, this increase amounted on an average to 4.4 per cent for an increase from 3.6 to 8 foot candles of light on the working plane. The saving to the Post Office in salaries due to this increase of speed of work was estimated to amount to $148,000 per year, a net gain of $109,000 over the cost of increased intensity of illumination.

2. Those having normal or nearly normal eyes worked most rapidly and with less fatigue under an intensity of artificial illumination of between 8 and 10 foot candles. Those with eye defects in particular showed less fatigue when working under high than when working under low intensities of illumination.

3. The number of eye defects was found to sustain a direct relation to the amount of strain put upon the eye by the work in question; and an inverse relation to the intensity of illumination under which the employees had been accustomed to work.

The importance of the above observations in relation to accident prevention alone may be gleaned from the fact that our sense of sight is the primary contributing agent for approximately 70 per cent of our muscular activities. In other words, it is our response or failure to respond to visual impressions that determines whether safety or injury results. Says Dr. McBride, "If indistinct vision causes a delay of even a fraction of a second in recognizing a point of danger, that delay may be just enough to tip the scales to the side of an unfortunate accident. May we not feel with confidence that this is the explanation for many accidents where the injured person truthfully says he did not see the danger point?"

This consideration brings us now face to face with the conclusion that speed of vision and acuity of vision is a joint factor in both industrial safety and speed of production. In the March, 1920, issue of *The Journal of Industrial Hygiene*, it was pointed out that in the fatigue survey the most important data are those which have to do with lighting, glare and reflection, etc. To such influence it is ventured to ascribe a loss in productivity of $60 per annum for each worker, or about $2,500,000,000 per annum for the entire working population. Be this even a gross exageration, which the author does not be-

lieve, it is obvious that the reduction of accident rates in this major group could handsomely pay its own way in industry. R. A. Palmer, of the General Electric Company, brings forth in *Manufacturing Industries*, September, 1927, numerous instances on record of increased production, due to increased level of illumination, anywhere from 12.5 per cent to 25 per cent.

What are then the more important considerations involved in this problem?

### VISIBILITY UNDER COLORED LIGHT

The majority of investigators agree with Dr. Max Poser that "Daylight, being a diffused light, to which our visual organ is most adapted, causes the least eye fatigue as many experiments have shown." Ferree and Rand explained the influence of composition of light, which is a combination of the effects of wave-length and purity, stating that "The shorter the wave-lengths, and the greater the purity, the clearer is the image formed." "White light, which is made up of all the wave-lengths of the spectrum mixed in what is called a balanced or neutral proportion for the eye gives a better power to discriminate details on the printed page than any colored light of equal luminosity even though of spectrum purity." The reason for this is obvious: seeing is due to the difference of reflections from objects and their background. The ideal black body against ideal black background will not be visible, but if placed against a favorable background of high reflective power it will stand out sharply and form a definite image. For this reason, the use of light with preponderance of any color forms an unfavorable background.

Obviously, therefore, the *intensity of light* is a relative term which should be considered only *in relation to the kind of light.* In the case of integral white light, the increase of visibility is in proportion to the increase of intensity or brightness. For colored light, however, the effect of increase of its intensity does not stand in direct proportion to speed and acuity of vision.

Ordinary artificial light is colored light. Such colored light, depending upon its hue and saturation, is strong only in its subjective effect. For this reason, as the tests by Ferree and Rand have shown, a superficial comparison of colored and colorless light usually results in the wrong impression that colored light is brighter. Visibility, however, under such light is poorer than under the white light.

Very interesting tests made by Frank E. Carlson of the National Lamp Works of the General Electric Company, on relative value of daylight, tungsten filament, and mercury arc light as measured by visual acuity, shows, considering the zinc plate results, "that the advantage seemed to go very decidedly to daylight, with tungsten and mercury vapor ranking second and third respectively, throughout the entire range of intensity." Likewise, the tests on the effects of mixing artificial light with daylight on important functions of the eye conducted at Bryn Mawr College, seem to indicate that for all intensities the artificial light gave the poorest results,

the daylight the best, and the mixture in equal proportions an intermedate result.

of wave-lengths of visible spectrum taken as an abscissa, and the percentage of visibility as ordinate with 100

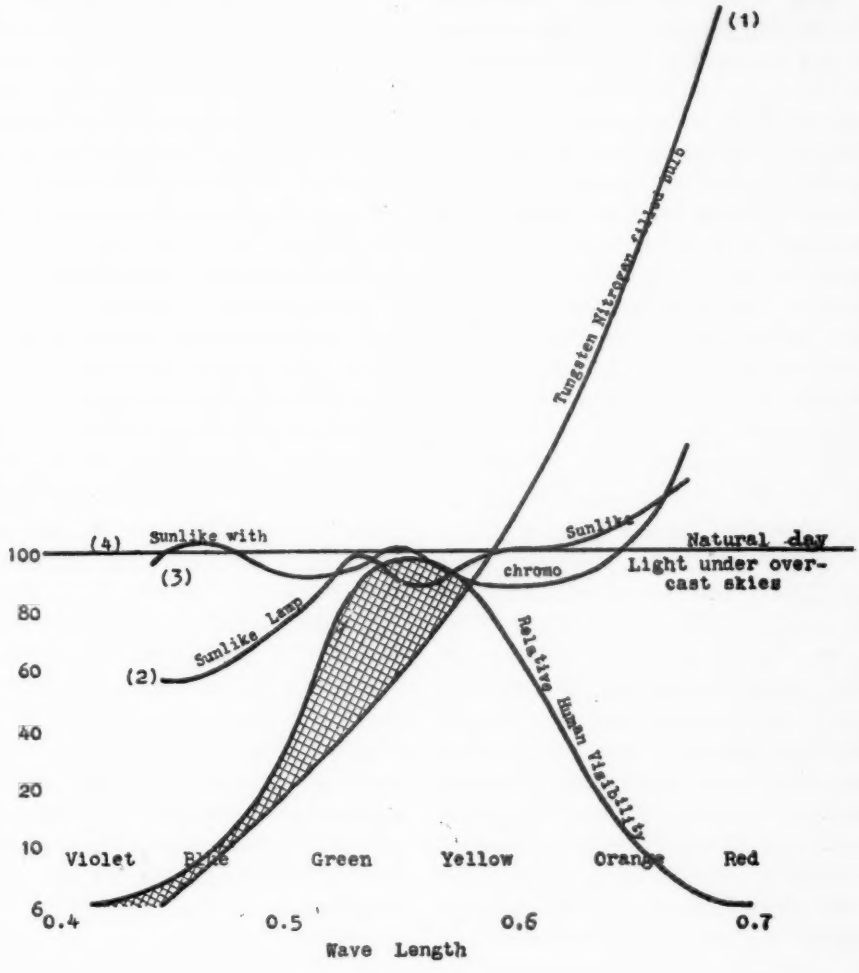


FIG. 1. VISIBILITY CURVE

Under colored light of ordinary electric bulb, deficient in violet, blue, and green rays, greater intensity of illumination is needed for the same visibility as under synthetic white light such as produced by both types of Sunlike Units.

To make this point clear, let us consider a curve (fig. 1) of relative human visibility throughout the range

per cent visibility practically coinciding with daylight under overcast sky. The curve will appear then of a sinu-

soid shape with apex in the middle of the spectrum, descending on both sides in S-shape, falling down very low both in blue and red regions. This indicates that the clearest vision, as well as the greatest speed, power to sustain, etc., occur under the wave-lengths of the mid-region of the spectrum. While the short wave-length forms clear images on the retina, the wave-lengths in the mid-region of the spectrum give the retina its highest power to discriminate detail in these images. Dr. Poser asserts, therefore, that the excess of the yellow rays in most of our artificial light sources should be neutralized in order to approach daylight. It is not necessary, according to him, to obtain absolute standard of daylight quality, as determined spectroscopically, for our light sense can overcome some variation of color combinations in the light source without experiencing fatigue. The Bryn Mawr investigators agree with him by stating, however, that "unfortunately *none* of our artificial illuminants are entirely colorless,—all have a dominant wave-length or group of wave-lengths." Obviously these illuminants do not radiate the wave-lengths of the spectrum which help maximum acuity of vision.

### PURITY VERSUS INTENSITY

It is particularly important, in this connection, to remember that integrated white light (within the limits of spectral composition between sunlight and light under overcast skies) gives greater acuity of vision, greater speed of vision, more accurate discrimination of details, correct presentations of colors and hues, and is more gentle to the eye *without the necessity for the intensities which would be necessary with ordinary artificial light with predominating wave-lengths.* It is on this ground that Dr. Poser has arrived at the conclusion that fine detail work does not demand brilliant illumination, but a soft white light of moderate intensity. Such a light proves far more satisfactory and prevents eye fatigue.

In other words, any change in the present method of artificial illumination which would produce integral white light, would increase speed of vision, acuity, power of sustaining, and color discrimination with lower intensities than would be necessary with colored lights produced by incandescent filament in a gas-filled lamp or vapor lamp. Furthermore, any change of lighting which makes the object easier to see at a lower level of illumination will also increase the speed of vision at the higher levels of illumination. This, translated into practical terms, means that *an artificial light of spectral value approximating sunlight or overcast sky light will reduce accidents, increase production, reduce spoilage, and prevent unnecessary eye-strain.*

### IMPORTANCE OF DAYLIGHT QUALITY

Heretofore several attempts have been made to produce artificial light of a spectral value approximating daylight, but the principle employed in the correction of quality was that of filtering or arresting the excess of wave-lengths or groups of wave-lengths which were considered undesirable for color matching purposes.

The employment of blue and bluish-green ray filters has been resorted to almost exclusively. By this method, the intensity of light was greatly reduced, rendering such units uneconomical in operation. At the same time, use of ray-filters, restricting the diffusion of the light, makes general illumination by means of these lighting apparatuses impractical.

For several years past in Europe and more recently in this country, a notable success has been achieved in the art of artificial reproduction of daylight, which has gained a wide recognition and diverse application in a large number of industries as well as for residential lighting. Such an apparatus constructed in conformity with the patent Gamain, and generally known as a *Sunlike* unit, besides approximating with a remarkable closeness the spectral value of either a June sunny day or diffused light under an overcast sky, i.e., having the color temperature values from 4575°K to 7200°K, depending on the diffuser employed, has a remarkable power of diffusion of light at a wide angle, without the glare or concentrated bright spots. Incidentally, its actinic value is approximately two times stronger as measured by photographic plates than that of the commonly known blue photographic bulb. Another peculiarity of this new type of light is that ultraviolet rays, which generally impair the transparency of the cornea, and therefore make perfect vision impossible, are successfully combated, by the employment of glass of the composition similar to Crookes lenses popular for eye-glasses.

Another important problem in practical illuminating installations in factories, workshops, schools, laboratories, and homes is, of course, the elimination of specular reflection or glare. It is well known that the presence of high brilliancy in the field of vision produces disturbance in the control of the mechanism in the adjustment of the eye, which rapidly leads to the fatiguing of the muscles of adjustment, and the loss of power to sustain the precision of adjustment needed for clear seeing, as has been shown by the Bryn Mawr experiments.

To quote from *The Ocular Principles of Lighting*, by Poser, "the eye has grown up under daylighting. Under this condition only three adjustments have developed and indeed only three are needed: the reaction of the pupil to regulate the amount of light entering the eye and to aid the lens in focussing the light from objects at different distances; and accommodation and convergence, to bring the object on the principal axis of the lens and the image upon the fovea, conditions necessary for the formation of the clearest images by the lens and for the best discrimination of these images by the retina. . . . . Artificial lighting, with its unnatural and unfavorable conditions for clear seeing has come late in the history of the race and the eye has not developed any reactions or adjustments to meet the conditions imposed. . . . . This striving to clear up its vision by ineffectual maladjustments is the cause of what is commonly called eyestrain."

The use of Sunlike illuminating apparatus offers the solution of this problem in two ways. For close work on benches and the like the

peculiarity of the diffusion of light through a special vask is such that while the intensity of illumination thrown on the work directly under is 12.7 candlepower per square inch, and at an angle of 45° is still 11.1 candlepower per square inch. The eye placed at the level of the lamp, however, receives less than one candlepower per square inch, even when a bulb of 200 watts is employed (fig. 2). Another way to completely eliminate the glare is to install this apparatus for totally indirect illumination. For instance, four 75 watt units installed in wall brackets for indirect illumination of a room of 255 square feet floor area gives uniform illumination throughout the area of 8 candle power per square feet, while levels of illumination of 10 and 15 candle power could be attained respectively with the increase of wattage per square foot from 1 watt to 1.3 and 1.7 (fig. 3). In this manner, another cause of eye fatigue and accidents, namely that of brilliant image falling upon a part of the retina and causing a sharp contraction of pupil, is eliminated (fig. 4).

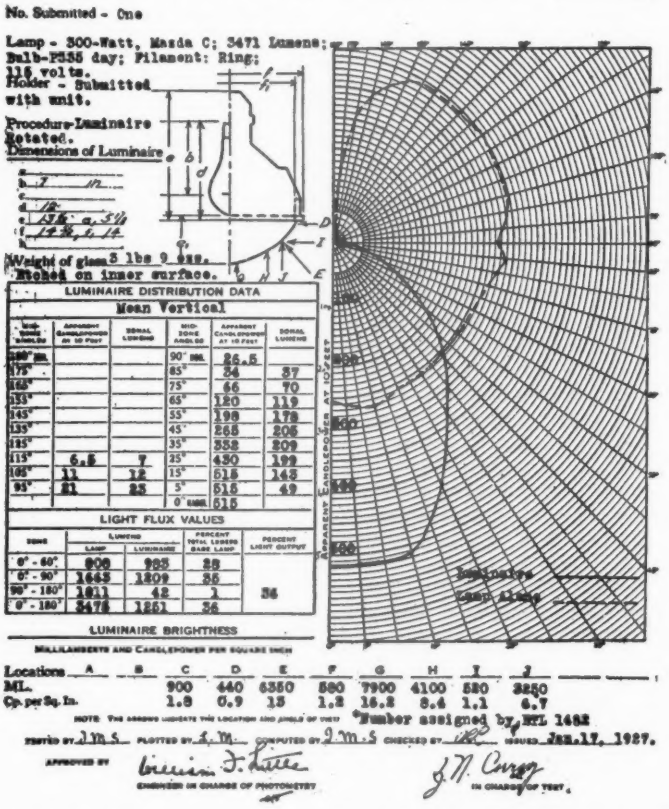
No. Submitted - One
Lamp - 300-Watt, Mazda C; 3471 Lumens;
Bulb-P35 day; Filament: Ring;
115 volts.
Holder - Submitted with unit.
Procedure-Luminaire Rotated.
Dimensions of Luminaire
Weight of glass 3 lbs 9 ozs.
Etched on inner surface.
LUMINAIRE DISTRIBUTION DATA
Mean Vertical
LIGHT FLUX VALUES
LUMINAIRE BRIGHTNESS
Millilamberts and Candlepower per square inch
Locations A B C D E F G H I J
ML. 900 440 6350 580 7900 4100 580 3250
Cp. per Sq. In. 1.8 0.9 13 1.2 16.2 8.4 1.1 6.7
*Number assigned by MTL 1482
Tested by J.M.S. Plotted by J.M. Computed by J.M.S. Checked by ... Issued Jan.17, 1927.
Approved by
Engineer in charge of photometry
In charge of test.

FIG. 2. CANDLEPOWER DISTRIBUTION FROM A SUNLIKE APPARATUS REPRODUCING DAYLIGHT

### PSYCHOLOGICAL EFFECTS

The last, but not least, important consideration in the relation of illumination to accident rates would natu-

FIG. 3. RESIDENTIAL ILLUMINATION BY MEANS OF INVERTED SUNLIKE APPARATUS
Gives soft, diffused, restful, and efficient light

FIG. 4. OLD-FASHIONED ELECTRIC ILLUMINATION
Conducive to fatigue, eyestrain, errors, and large labor turn-over

rally be expected from the effect of colored lights and subdued lights of low intensity on the mentality and psychologic tone of the workers. Everyone is familiar with the drowsy, dreamy effect that subdued light from amber colored lights invariably produces. Vagueness of mind, inclinations to dreams, drowsiness, and sluggish reactions, are inducive to inattentiveness with danger of accidents attending. On the other hand, the stimulating effect of high intensities of illumination with their wakeful, cheering influence, is equally well known, with attending mental alertness, awareness, efficiency, and timely warning against possible accidents.

During the last Electrical Exposition at the Grand Central Palace, a number of instructive observations were made by the Sunlike Illuminating Company on the visibility of black print on white background as used by the American Optical Company for eye testing. One of these cards was illuminated with an ordinary tungsten bulb. Another with a Sunlike apparatus with equal foot-candle intensity.

FIG. 5. UP-TO-DATE SUNLIKE ILLUMINATION IN A PAIRING DEPARTMENT OF A LARGE HOSIERY MILL

Eliminates 70 per cent of errors on 5000 dozen pairs daily production and prevents optiphosis.

Readings were taken at a distance of 10 feet by volunteers from the visitors and invariably from 1 to 2 more lines of smaller type were read under the Sunlike lamp.

SUMMARY

The relation existing between accident rate and faulty illumination is sensed and recognized by all investigators. Statistics on the subject are, however, deplorably inadequate. Faulty illumination as a contributing cause to accidents is due to plurality of defects:

(a) Low level of illumination;
(b) Unevenness of distribution of illumination;
(c) Difference in level of illumination from natural and artificial sources;
(d) Unfavorable spectral composition of artificial light;
(e) Glare or blinding effect of open source of light.

Results of faulty illumination are to be divided between those where damage is caused to:

(A) Person
  (1) General injury
  (2) Injury to eye
(B) Property
  (1) Damage to machine
  (2) Damage to product

Certain improvements in illumination increase production and reduce spoilage damage and accidents. Artificial diffused daylight is therefore advocated.

# Suggestion Systems Compared

By Z. Clark Dickinson, *University of Michigan*

*Suggestions submitted by employees are a source of not inconsiderable profits; moreover, the number of suggestions submitted is a good index of employee morale. Dr. Dickinson shows how informative the statistics on this topic can be, if rightly gathered and properly understood.*

Quantitative data were obtained relating to the operation of employees' suggestion systems in 26 concerns, mainly manufacturing. These show very wide variations in numbers of suggestions obtained per thousand employees, and much smaller differences in percentage adopted (median between 23 per cent and 25 per cent). Usually the awards are rather small,—$10 or less. Problems of making such statistics more illuminating, especially by interplant comparisons, are discussed.

FOLLOWING are excerpts from data which have been published and discussed more fully elsewhere,[1] together with some additional observations on the statistical problems involved in quantitative checking-up of results obtained by suggestion-reward systems.[2]

Table 1 gives figures as to numbers of suggestions received and adopted, rewards paid, etc., in a recent representative year (in a few cases, averages based on more than one year). Data were used, so far as possible, which had already been independently recorded and summarized by the companies according to their own definitions and methods; hence the items given within the various columns are not completely comparable. Probably they are nearly enough homogeneous so that some valuable hypotheses may be formed from them; but just now we are inquiring what sort of standard terminology and definitions would make such statistics more significant in the future.

[1] *Suggestions from Employees*, by the writer. Michigan Business Studies, Vol. 1, No. 3. University of Michigan Bureau of Business Research, 1927.

[2] Apparently not less than three or four hundred American concerns, employing over a million workers, are now making use of this device, and it is by no means confined to large establishments. Out of 210 companies reporting within the last two years to the National Industrial Conference Board that they had "a suggestion system," 55 were concerns employing 500 or less workers each. Most of the data exhibited herein were furnished to the Michigan Bureau directly by 26 concerns, which are fairly well scattered as to locality and industry. All but one of these systems have been in operation since 1920 or longer.

TABLE 1

*Comparative data on suggestions from 26 companies*

| (1) ESTABLISHMENT NUMBER | (2) INDUSTRY, LOCATION | (3) DATA FOR YEAR* | (4) SIZE† | (5) NUMBER SUGGESTIONS RECEIVED PER 1000 EMPLOYEES | (6) PER CENT ADOPTED | (7) AVERAGE PAYMENT PER AWARD‡ | (8) LOWEST AND HIGHEST AWARDS§ | (9) AVERAGE NUMBER SUGGESTIONS SUBMITTED PER SUGGESTER | (10) PER CENT WOMEN AMONG ALL EMPLOYEES | (11) PER CENT WOMEN SUGGESTIONS AMONG ALL SUBMITTED | (12) PER CENT WOMEN AMONG ALL AWARDED | (13) HAS PLANT EMPLOYEE REPRESENTATION? | (14) EMPLOYEE REPRESENTATIVE ON SUGGESTION COMMITTEE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A-1 | Rubber, Mid-West | 1925 | Large | 229 | 7.5 | $21.30 | $2.50–500.00 | | | | | Yes | Yes |
| A-2 | Rubber, Mid-West | 1925 | Large | 100 | 22.0 | 11.00 | 5.00–500.00 | 1.4 | 11 | | 1.8 | | No |
| A-3 | Rubber, Mid-West | Ave. | Medium | 156 | 20.0 | 10.00 | 3.00–100.00 | | | | | Yes | Yes |
| A-4 | Electrical, East | 1925 | Large | 160 | 22.0 | 5.26 | 2.50–500.00 | | | | | Yes | Yes |
| A-5a | Electrical, East | 1925 | Large | 230 | 27.0 | 16.10 | 5.00–500.00 | | | | | Yes | Yes |
| A-5b | Electrical, East | 1925 | Medium | 132 | 27.5 | 12.16 | 3.00– 65.00 | 6.6 | 32 | 9 | 12 | Yes | No |
| A-6 | Electrical, Mid-West | 1925 | Medium | 2125 | 42.0 | No cash | | 1.8 | 27 | | 0 | Yes | Yes |
| A-7 | Textile, East | 1923 | Small | 168 | 29.0 | 2.30 | 1.00– 10.00 | | 48 | 11 | 11 | Yes | No |
| A-8 | Paper, East | 1925 | Medium | 1132 | 29.0 | 3.48 | 2.00–100.00 | 2.75 | 13.3 | 1.3 | 0.6 | No | No |
| A-9 | Paper, East | 1925 | Medium | 325 | 29.0 | 9.54 | 5.00–100.00 | | 5–10 | | | Yes | No |
| A-10 | Paper, Mid-West | 1925 | Small | 620 | 18.0 | 4.63 | 1.00– 50.00 | | | | | Yes | Yes |
| A-11 | Woodwork, Mid-West | Ave. | Small | 145 | 40.0 | 1.50 | 1.00– 25.00 | | | | | Yes | Yes |
| A-12 | Brass, East | 1926 | Medium | 67 | 34.0 | 7.40 | 5.00– 25.00 | | 60 | 14.4 | 10.5 | Yes | No |
| A-13 | Food, British | 1926 | Medium | 100 | 33.0 | 3.50¶ | 1.25–?¶ | | 50 | 34 | 35.6 | Yes | Yes |
| A-14 | Food, British | 1925 | Large | 765 | 18.0 | 2.85¶ | 0.50–300.00¶ | | | | | Yes | Yes |
| A-15 | Leather, British | 1925 | Small | 38 | 40.0 | 13.10¶ | 0.25– 25.00¶ | | | | | Yes | No |
| A-16 | Coal, Iron, West | Ave. | Large | 4 | 17.2 | 60.00 | 5.00–100.00 | | | | | No | Yes |
| A-17 | Office Fixtures, Mid-West | Ave. | Large | 750 | 25.3 | 3.00 | 1.00–100.00 | | 30 | 4.1 | 7.4 | No | No |
| A-18a | Chemical, East | 1926 | Medium | 636 | 20.5 | 16.22 | 1.00–500.00 | | 26 | 4.2 | 4.5 | No | No |
| A-18b | Chemical, East | 1926 | Large | 130 | 41.3 | 6.78 | 1.00–500.00 | 3.5 | 17 | 5.0 | | | |
| A-19 | Public Utilities, Mid-West | 1925 | Medium | 219 | 23.0 | 4.36 | 0.50–250.00 | | | | | Yes | Yes |
| A-20 | Public Utilities, Mid-West | | Large | 427 | 18.0 | 5.50 | 0.50–500.00 | | | | | | |
| A-21 | Public Utilities, East | 1925 | Large | 616 | 10.0 | 7.75 | 5.00–100.00 | | | | | | |
| A-22 | Public Utilities, East | Ave. | Medium | 22 | 35.0 | 39.83 | 10.00–250.00 | 1.54 | 66.6 | 43.0 | | Yes | Yes |
| A-23 | Department Store, East | | Large | 114 | 17.0 | 3.72 | 1.00– 25.00 | | 66 | | | | |
| A-24 | Department Store, East | 1925 | Large | 150 | 10.0 | 2.00 | 1.00– 5.00 | | 60 | | | No | No |
| A-25 | Department Store, East | 1926 | Large | 19 | 18.0 | 5.00 | 1.00– 10.00 | | | | | | |
| A-26 | Life Insurance, East | 1925 | Large | 30 | 25.0 | | 3.00– 50.00 | 1.38 | | | | | |

* "Ave." signifies that the data for two or more recent years have been averaged.

† Large, over 5,000 employees; medium, 1,000 to 5,000; small, under 1,000.

‡ Arithmetic average amount paid in cash awards. Usually includes special prizes for best suggestion of year, etc.

§ In some cases the high figure has been reached only in other years than that for which other data are given.

¶ Approximate American equivalents of British money.

Column 5, *Number of Suggestions Received per 1000 Employees*, presents two problems of definition: What is meant by a "suggestion received," and how the count of total employees (who are potential suggesters) is made. Probably a suggestion should be defined, at least for purposes of inter-plant comparisons, as an idea submitted to the suggestion committee in writing, although, of course, from many points of view, the merely verbal suggestions which are very difficult to count accurately are just as important as those formally written out. The "average total number of employees for the year," to be used as a divisor for reducing the absolute number of suggestions received to a relative basis, may well be the figure which is employed for figuring annual labor turnover. This total, I believe, is usually computed by averaging the total numbers on the payroll at the beginning of each month.

Column 5, *Per Cent Adopted of Suggestions Received*, refers to a measure which is very commonly used, but which nevertheless offers great opportunity for ambiguity. Companies are using, for this general purpose, a variety of terms, such as, approved, accepted, awarded, and adopted. "Approved" and "accepted" surely are synonymous, but "awarded" might well be reserved for those which are given something more substantial than honorable mention or congratulation. And not even all suggestions which are given material prizes are actually adopted. The suggester may be paid a small monetary reward for the potential merit of his plan, but its use may be held impracticable for the time being. Perhaps the management actually considers its value too slight to repay the bother of changing the routines involved.

For practical inter-plant comparisons it is hardly feasible to keep separate account of all these degrees of merit, and apparently the best single measure is that furnished by the suggestions which are actually adopted. Adoption is the best guarantee that the employer considers the suggestion to have real business value.

Column 7, *Average Payment per Award*, offers difficulties partly dependent on those just mentioned, and some in addition. The added puzzles are due to complexities in the nature of rewards given,—commodity prizes, merit marks which have potential cash value provided enough of them are accumulated, special added prizes for the best suggestion of the year, or largest number approved, or for every fifth or tenth, and so on. Some plans, moreover, are run entirely on honorary awards, neither cash nor commodity prizes being employed. Another difficulty for this column is readily apparent to even an amateur statistician, namely, what is meant by "average"? Variety of rewards is likely always to baffle tabular summaries; but in practice the simple average, obtained by dividing the total sum of money paid out in rewards by the total number of suggestions which have received such rewards, gives a fairly satisfactory basis for comparisons. If a central coöperative agency were working up tables from complete original data, collected according to standard definitions (as the Wharton School's research department com-

putes labor turnover figures), it would very likely concentrate attention on average payment per *adopted* suggestion (giving separate consideration to the dollar awards and annual prizes given mainly to encourage the suggesters); and it would doubtless also experiment with methods of averaging, table 2, based on data from ten companies. This is a type of tabulation which is very easy to carry out when the materials for items we have just discussed are available; and comparisons among the distributions, from year to year and from plant to plant, are of some significance.

TABLE 2

*Percentage of all awards falling at or below amount named (cumulative)*

| VALUE OF AWARD | ESTABLISHMENT NUMBER; PERIOD | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | A-4* | A-5a 1926 | A-7 1923 | A-8 1925 | A-10 1925 | A-16 4-yr. av. | A-13† 1925 | A-14† ¶ | C-2‡ | 1§ |
| $1.00 | | | 11% | | 9.5% | | 1.2% | 17% | | |
| 2.00 | | | 77% | 91.3% | 76.1% | | | | | |
| 2.50 | 84% | | | | | | 74.2% | 83% | | |
| 3.00 | | | | | | | | 91% | 91% | |
| 4.00 | | | | | 84.1% | | # | | | |
| 5.00 | 94% | 49% | 96% | 95.7% | 90.4% | 3.8% | | 95% | | 54% |
| 10.00 | | 73% | 100% | 98.5% | 90.4% | 11.5% | | | 94% | 88% |
| 15.00 | | 79.1% | | | 96.8% | 15.3% | | | | 95.4% |
| 20.00 | | 82% | | | | 19.2% | | | | |
| 25.00 | | 91% | | | | 34.6% | | | 95% | |
| 50.00 | | | | | | 57.7% | | | 96% | |
| Maximum award..... | $100 | $100 | $10 | $100 | $50 | $100 | | $300 | $400 | $100 |
| Per cent of all awards which were maximum amount..... | 0.3 | 0.08 | 4.0 | 0.07 | 1.6 | 42.3 | | 0.01 | 0.4 | 0.9 |

* Total over a long term of years: hence not strictly comparable with others, on account of price-level changes.

† Approximate conversions of shillings into dollars.

‡ 2½ yr. period, 1921–23.

§ Data from Industrial Relations Counselors.

¶ 6-mos. period, 1925–26.

# Amount of maximum award not at hand; but 25 per cent of total number of awards were "one pound sterling or over," and the average value of this 25 per cent was twenty-six shillings plus each.

in order to avoid giving undue weight either to the few large awards or to the large number of modal awards.

The asymmetry of the frequency-curve of prizes (large number of small awards, small number of medium-sized as well as large) which apparently is to be expected, is brought out by

The point of Column 9 (reverting to table 1), *Average Number of Suggestions Submitted per Suggester*, may not be immediately obvious. This figure is an index of the extent to which the suggestions come from individuals submitting more than one suggestion each. Perhaps a simpler way of

showing how many individuals were sufficiently stimulated to submit at least one suggestion would be to make a column show "Number of Separate Suggesters, per 1000 Employees." Either process indicates better how widespread is the interest of employees in the suggestion system than does the mere total number of suggestions submitted. It may also be desirable to show how many separate persons received prizes. In Establishment A-6, for instance, during 1926, 1076 persons submitted 6065 suggestions; and 2418 of these, from 721 persons, were "approved." (No cash rewards are given; but all approvals involve commodity gifts, as well as notation on the employment record.)

Columns 10 to 12, concerning suggestions from women employees, seem worth while, both from the standpoint of devising means of arousing more interest among the women, and for making sounder inter-plant comparisons.

Classification of suggestions, both those received and those adopted, by subject-matter, would give valuable clues to the investigator as to what all this suggestion activity really amounts to. (Classification of rejected suggestions, by causes of rejection, is also of some value, e.g., for showing possibilities of educational work.) There is an opportunity here for coöperative action toward some broad and uniform categories which can be used by all companies. At present every concern uses a subject classification of its own. The scanty materials which we were able to collect, however, indicated that the majority of suggestions received are not directed toward increasing the comfort, privileges, or convenience of employees in any narrow sense. Following are some of the headings and percentages given us: Establishment A-2: Safety and comfort, 30 per cent; elimination of waste in labor and material, 70 per cent. Establishment A-19: Safety and health, 8 per cent; employees' comfort or welfare, 4 per cent; improved efficiency of operations, etc., 88 per cent. Establishment A-5a: Safety, 6 per cent; factory convenience, 10 per cent; mechanical, 71 per cent; electrical, 13 per cent.

Some interesting parallels and differences are evident here between suggestion and employee representation systems.

An item which is of outstanding interest to the employer and his suggestion-plan manager is the total of savings accomplished by means of suggestions. In some companies the estimates, or back-checked records, for all suggestions as to which any dollar-saving estimates are possible, are accumulated; and so, at the end of the year, the total of payments to suggesters is calculated to be about 10 per cent (commonly) of the total savings attributed to suggestions. At present this is a delicate subject, but in time it must be frankly faced, and inter-company comparisons are bound to be made by one means or another.[3]

Many other tabulations, of course, will provide useful employment for the personnel research worker. The

[3] Problems of measuring values of suggestions and of determining what is a "fair" reward for them are discussed in some detail in *Suggestions from Employees*, pp. 7–21.

occupation of the suggester will provide a point of departure, subject to the well-known difficulties encountered in attempting to define occupations. Companies now commonly classify their suggestions according to their internal departments, doubtless because emulation among these as to safety and production records had been found useful; but these figures are not of much value for comparisons among industries. It would be well to keep a definite count of the number of promotions or improved placements which are credited to the suggestion system. Other counts of interest to students of labor management would be by length of service, nationality, mental test records, etc.

In general, the same factors may be tested in relation to suggestions that are studied in analyses of labor turnover. The suggestion record, like the turnover record, is in part an index of fluctuations in the morale of the labor force. In addition to this function, suggestions appear to yield not inconsiderable business profits from improved methods; and to furnish excellent opportunities for improving the employee's knowledge about his work, even if his ideas never become worth adopting.

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# A Summer in the Ford Works

By Chen-nan Li, *Yale University*

*Dr. Li here describes his personal experiences and observations while a worker in the plants of the Ford Motor Company. Part I treats of how the workmen are handled: source of supply, provision for adjustment, minimum wage and rate of increase, vacation and lay-offs, education and training, welfare work, attitude toward unionism, and personality in industry. This last topic includes speed, repetition, and contact between labor and management. Part II describes how a Ford worker lives: his factory life, home life, cultural life and recreational life.*

IN THE summer of 1925, I had the privilege of joining the Yale Industrial Research Group and of spending two months and three weeks in the Ford Motor Company. I worked in both the River Rouge Plant and the Highland Park Plant. I came in contact with not less than ten departments, the most important of which were the Motor Assembly, Grocery Store, Employment Office, Receiving, Battery, Compensation, Safety and Hygiene, and Sociological departments. My experience in the various departments and my observations of industrial relations at the Ford Plants were embodied in a rather detailed account entitled "A Summer in the Ford Motor Company." The manuscript is kept in the Yale University Library. Nothing regarding this first summer's work will be recounted here.

In the summer of 1926, I was again given the opportunity of working in the Ford Plants from June 23 to September 18, a total of two months and twenty-six days. The company very considerately put me in several departments in which I had not had time to work the previous year. I worked in the Glass Plant for over a month, the Garage for a week, the Motor Repair Department for three weeks, the Rolling Mill for a week, and the Power House for two weeks.

The fact that the Yale students were rapidly transferred from one department to another precluded, of course, the possibility of acquiring proficiency in any mechanical process that required much skill. But from the standpoint of studying industrial relations this was a distinct advantage. In the first place, it gave the student an opportunity to try a great variety of jobs. This enabled him to gain an insight into the nature of the conditions under which the workmen labored. The work in a modern factory varies all the way from jobs that require no skill at all to those that

presuppose years of training; from those that involve only one or two simple operations to those that consist of a long series of fine movements; from those that require merely brute strength to those that demand engineering ability. To gain a comprehensive understanding of the working conditions, the student should experience as many types of work as possible. In the second place, it gave him an opportunity to come into personal contact with various types of workingmen—skilled and unskilled, novice and expert, married and single, native and foreigner, conservative and radical. The Ford Motor Company is a gigantic organization. It is an organization that has some 100,000 men on its payroll, and that produces at normal times 7,000 cars every day. It combines a host of industries relative to automobile manufacture. It has its own coke ovens, blast furnaces, steel mill, rubber works. It manufactures paper, cement and artificial leather. It owns railroads and freight boats. It controls its own iron and timber supply. The student who worked in a number of departments could practically study a new industry each week. Furthermore, the company has thousands of up-to-date machines that perform a series of complicated movements at a single stroke. It is a novel and interesting experience for an academic student to operate, for example, a turbo-generator that makes 1800 revolutions per minute, and to run a drill press that bores 48 holes in a single operation.

I was particularly fortunate to have spent two consecutive summers in the same firm. Such a huge organization must be studied from many points of view. After a second summer in the Ford Plants, the conclusions I had drawn in the previous year seemed to be rather hasty and sometimes not at all warranted. In this paper no detailed account will be given regarding the many jobs I had in the various departments during the summer of 1926. Suffice it to say here that in the Glass Plant I worked in the "Batch Room" (where the constituent elements of glass were weighed and mixed) at the furnaces, on a rolling machine, at the polishing wheels and on a great variety of miscellaneous jobs. In the Garage I learned to repair Fordson Tractors. In the Motor Repair Department of the Motor Assembly I learned to find out imperfections in the motor and to make proper changes and adjustments. In the Rolling Mill I worked at the finishing stands, where steel billets were rolled into finished products ready for shipment. In the Power House I worked at the boiler, the turbo-generator, the turbo-blower, the condenser and the air-compresser. At times I was engaged entirely in unskilled work, such as removing bricks and wiping machines. At times I was doing more or less skilled jobs, such as repairing motors and rebuilding the transmission of a tractor. At times I had to exert my whole strength. At times I could stand idly watching the machines work. Having worked in practically all the important non-production departments last year, I decided not to do any clerical work this year. This gave me more time to associate with the so-called "production men." In

the following pages I shall endeavor to state my observations regarding the labor policy of the company and the life of a Ford workingman. The reader's indulgence is requested if, occasionally, facts treated in last year's report should be cited as evidences to support certain conclusions.

### THE LABOR POLICY OF THE FORD MOTOR COMPANY

The labor policy of the company can be best discussed under the following headings:

*1. The source of supply.* The Ford Motor Company is cosmopolitan in its labor population. Nearly every nation on earth is represented on its pay roll. Besides native Americans, there are enormous numbers of Canadians and Europeans of every ethnological origin. South Americans and Western Asiatics also constitute a not altogether negligible minority among the Ford employees. To be sure, the Chinese and the Japanese are confined to students; but this is a fact for which the company cannot be held responsible. Although I should not say that racial prejudice has entirely disappeared in the Ford Plants, it is certainly not a part of the policy of the management. The Employment Office prefers a native to a foreigner, a northerner to a southerner, a Detroiter or a Michigan man to a citizen of any other city or state. This, however, is not a manifestation of racial prejudice. The company wants its men to be steady. The nearer to Detroit the worker lives, the more likely it is that he will be a steady employee.

Another feature of the Ford labor supply is the employment of substandard men. In the factory one not infrequently meets the blind and the crippled. Though their number is negligible, their employment is something unique in the Ford Plants. The company has so many varieties of jobs at its disposal that suitable work can be easily found for any man not totally disabled. It must not be understood, however, that any handicapped man can find work in the Ford Plants. The substandard men are employed, not because they are substandard men, but because they have, in some way or other, been previously connected with the Ford Plants. In many cases they received the injury while in Ford employment.

Perhaps a few words should also be said here regarding the employment of women. Like the substandard men, the women are employed not because they are women. Most of the Ford women are wives or daughters of Ford men who have in some way been temporarily or permanently disabled. A woman whose husband is an active worker in the factory cannot obtain employment in the Ford Plants. I am told that Mr. Ford believes that a Ford employee gets enough wages to maintain a family in decent circumstances, and that his wife should take care of the home and not work in the factory for additional income. The Ford women receive the same wages as men. They are given work that allows them to sit down. In a factory where workmen have to be on their feet eight hours a day, the freedom to sit down must be reckoned as one of the greatest privileges that a person can hope to secure.

*2. Provision for labor adjustment.*

One of the outstanding features of the Ford labor policy is that a foreman is deprived of the power to discharge a workingman. In case of disputes between an executive and a workman, or between one workman and another, the foreman can "lay a man off" for a period of ten days. Beyond that, the case must be referred to the Employment Office where a special officer takes charge of such matters. If, in the judgment of this officer, the foreman is wrong, the workman is usually retained, but is given work in some other department. Since the company has so many departments, such arrangements can very easily be made.

In the Ford Plants it is not at all hard to secure a transfer from one department to another, if the applicant has sufficient reasons to justify his request. Transfers are frequently given for medical reasons, or in recognition of some special aptitude or ability. The fact that the whole clerical force of the company is recruited from the rank and file of the manual workers, bears ample testimony to the readiness with which transfers are granted. Chronic drifters, however, are discouraged by every means. The company wants a man to stick to his job if there is no adequate reason for transferring him to some other department.

A man once hired is seldom discharged merely because of incompetency. He is given a chance to try many jobs. He is never obliged to quit unless every job should fail him. This is not likely to happen since so many jobs require little or no skill.

Another interesting fact in the matter of labor adjustment is the appointment of a negro to attend to the complaints of the colored people. A few years ago the feeling between the white and the colored workers in the Ford Factory was very acute. The negroes were often armed with dangerous weapons and were ready to resort to an "ordeal by combat" when the provocation seemed to them to be intolerable. Cases of bloodshed actually occurred. Numerous complaints were also heard from the colored workers that in the hands of white executives they were not given fair treatment in any case in which white men were involved. To remedy this situation, the company appointed a negro to work in the Employment Office whose special duty is to hear the complaints from the colored people and to bring about some satisfactory solution of their problems. While I should not say that the negroes are not at all discriminated against in the Ford Motor Company, they are, according to their own testimony, better off here than they would be in other manufacturing concerns.

*3. Minimum wages and rate of increase.* With a few exceptions, every Ford employee gets $5 a day in the first and the second months and $6 a day in the third month. If a man should work for a couple of years, we can almost neglect the first two months and regard his minimum wage as $6 a day. The usual rate of increase is 40 cents at a time. The scale runs something like this: $6, $6.40, $6.80, $7.20, etc. After $7.20, increase is very difficult and for many jobs it is impossible. Most jobs are rated; but the workmen do not always get the amount specified. The in-

crease of wages depends upon the nature of the job, the competency of the worker, and his relationship with the foremen. Though the foremen do not fix the wages, they make recommendations, and in that way they are very important factors to be considered. In the Ford Plants, however, foremen of different ranks know the workmen very well, so it is difficult for a single foreman to hold a man back on account of personal differences.

*4. Vacations and "lay-offs."* The Ford Motor Company used to have one or two weeks' "lay-off" in the summer season. Various departments are shut down at that time and an inventory is taken of the capital stock invested in factory equipment. The company has never paid the men during vacations or on holidays. Even the foremen have to punch a time card and are paid on a daily wage and not on a monthly salary basis. Since the company has, however, in the past several years, given its employees very steady work throughout the year, two weeks' "lay-off" does not necessitate much financial loss to the workingmen.

In 1926 a great change took place in the Ford Plants. Nearly all departments were running only five days a week. The company has, through carefully experimenting on the five-day-week plan in several departments, found out that the amount of production is not in the least reduced under the new scheme. There were all sorts of rumors that wage adjustments would soon be made so that a workman would receive six days' wages for five days' work. Some men were betting with one another that wages would be increased when the next pay day came. The majority of the men, however, were skeptical.

*5. Training and education.* For training and education, two organizations may be mentioned,—the Henry Ford Trade School at Highland Park and the School Department at the Fordson Plant. The Trade School takes in boys at the age of twelve or thereabout. Instruction is divided into two sections; a week in the classroom, and two weeks in the shop. The boys are trained to be skilled mechanics. They are given a cash scholarship to meet their expenses. They work on production material and are expected to turn out articles which are actually used. Nothing is done merely for practice. Some academic work is provided, but it is given an intensely industrial tinge. Most of the graduates of the Trade School work in the Ford Plants as tool-makers, die-makers and machine repair men. The Trade School reaches only a fraction of the Ford employees; consequently, it is not an important factor in the matter of education for the workingmen. The School Department at the Fordson Plant caters more directly to the interests of the Ford employees. This department operates three schools,—an electrical school, which offers training in electric wire and maintenance work; an apprentice school, which gives training in tool-making, die-making and machine repair work; and a service school which trains its students (the majority of them are from foreign countries) to be Ford service executives and repair men in this country and abroad. The service school has little to do with the

regular workmen, since its students all expect to leave the factory on completion of their courses. The electric school and the apprentice school are distinct institutions for the regular Ford employees. These schools are open to all Ford men without any discrimination. Workmen can attend the classes in their leisure hours. No tuition is charged. Periodical examinations are held, and certificates are given to those who have satisfactorily completed their courses. Graduation from these schools is usually followed by a transfer to a better paid job or an increase of wages on the same job previously held. This powerful incentive has served to attract a fairly good number of ambitious workers. It must be borne in mind, however, that these schools only cater to the interests of those who aspire to be skilled workmen, such as electricians, tool-makers, die-makers and machine repairmen. Over 90 per cent of the Ford employees do not receive any classroom training at all. Division of labor has been carried on to such a point that an overwhelming majority of the jobs consist of a few very simple operations. In most cases a complete mastery of the movements does not take any more than from five to ten minutes. All the training that a man receives in connection with his job consists of one or two demonstrations by the foreman, or the workman who has been working on that job. After these demonstrations he is considered a fully qualified "production man." All that he has to do now is to automatize these few operations so that speed may be rapidly increased. For this group of men, it seems to me that some educational opportunities should be provided. Some academic work, particularly courses dealing with the use of the English language, should be offered. If they could learn to speak and write decent English and to read for pleasure, it would not only increase their social efficiency but open numerous ways of harmless enjoyment.

*6. Welfare work.* The Ford Motor Company used to do very extensive welfare work for which a sociological department with a staff of over one hundred members was organized. When the company first raised its minimum wage to five dollars a day, it was understood that a part of it was the workman's share of the profit. This would be withdrawn from him if he were not living in decent conditions. The Sociological Department sent out a large number of advisers to visit the workmen's homes. They took pictures of the homes visited, and submitted reports on the conditions observed. It was on the basis of these reports that the company decided the qualification of a workman to receive his shart of the profit. This work must have been very effective, since reports in the archives of that department give conclusive evidences of improved living conditions among the Ford employees. When the other companies raised their wages, the five-dollar minimum of the Ford Factory was no longer as attractive as it used to be. The employees began to dislike the action of the company which now seemed to them to partake too much of the nature of paternalism. When opposition was apparent, the company deemed it wise to drop the

whole scheme. The staff of the Sociological Department has been reduced, and the scope of its work limited again and again. Now its main duties are the investigation of the sick and destitute cases, the determination of the amount of aid needed, and the distribution of gratuity checks.

In connection with the welfare work, mention should be made of the commissary, which comprises four departments,—a grocery store, a meat market, a drug store, and a shoe and dry goods store. The commissary caters only to the interests of the Ford employees. It sells from 10 to 15 per cent cheaper than other stores in Detroit. In the commissary at Highland Park the volume of business reaches at times $25,000 a day. In the summer of 1926 a similar store was opened at the Fordson Plant. It will probably outstrip the one at Highland Park in magnitude of business.

*7. Attitude toward unionism.* The automobile industry is regarded by union men as a stronghold of open shop policy. Like the other automobile manufacturing concerns, the Ford Motor Company does not recognize any labor or industrial unions. Bargaining, if there is any at all, is entirely on an individual basis. Shop committees and labor leaders are unknown. It is a current rumor that the Company has a very efficient secret service system with detectives scattered all over the factory to watch for any symptom of labor disturbances. Action is taken before any attempt on the part of the workmen to organize could come to fruition. This, I think, is much exaggerated. A secret service to watch for industrial troubles is hardly necessary, for the following reasons. In the first place, the foremen are always with the men, and everyone knows that the foremen have the interests of the company at heart. In the second place, during the eight working hours, men are supposed to be constantly at their jobs. Very little social contact between man and man is possible. Furthermore, it seems to me that the Ford workers are not at all disposed to unionize. Many of them are violent in their denunciation of labor organizations. If they have any disposition to unionize, they could get together without any difficulty when they are out of the factory. In the communities near the Ford Plants the inhabitants are predominently Ford employees. There are all sorts of ways by which they could meet and discuss matters of common concern. Yet the workmen do not seem to be interested in fraternizing among themselves except on a very small scale. Such being the case, it is not at all necessary for the company to adopt an attitude of watchful jealousy toward unionism. Another thing that lends no small support to this statement is the fact that a Detroit paper entitled "The Daily Worker" which has many communistic ideas, and which, in its editorials, often advised the automobile workers to unionize, is allowed to be sold right at the gate of the Fordson Plant. The company has, to be sure, a factory service department which has so-called service men stationed at various places. Their chief duty is to look out for loafers and intruders, and particularly to prevent thieving.

*8. Personality in industry.* Among the dehumanizing influences that have

often been ascribed to the modern factory system, the most important ones are speed, repetition, and lack of personal contact between labor and management. These are some of the inevitable consequences inherent in modern mass production and the extensive use of automatic machinery. Many authors have written on this subject and there is no need for elaboration here. In this paragraph I shall briefly discuss these features in connection with the Ford Plants.

a. Speed. No visitor to the Ford Plants ever fails to carry back the impression that the conveyor system speeds men to their utmost capacity. Each man is allowed only a limited time to complete his job and a limited space in which to execute his movements. Any delay on the part of one man makes it necessary for the whole gang to cease work. Repeated failures of this kind very soon eliminate the incompetent from the production line. Men are constantly in a state of nervousness and high tension. This, however, is only superficial observation. The speed of the conveyors has been so carefully regulated that, after a man has automatized his few simple operations, he can get his job done within the time allowed without undue haste and strain. If one is not unusually nervous or slow, he has no difficulty in working on the conveyor line. Then we must not forget that the conveyor system is only used in a few places in the Ford Plants. There are many departments where machines do the work, leaving little to be done by men. The workman has plenty of time to do his job, which sometimes consists in merely taking readings of certain measuring instruments. To a casual visitor the conveyor system is the most striking feature of the factory. He naturally falls into what we call in psychology the "fallacy of selection."

b. Repetition. Repetition is another indictment of the modern factory system. It is often asserted that monotony of work intensifies fatigue, creates disgust for work and produces mental abnormality. The Ford Motor Company is particularly known for its minute division of labor and the deadening monotony of its production process. The danger of repetition seems to me to be more imaginary than real. The human organism is remarkable for its adaptability to situations. After a man gets used to certain processes, change does not always appeal to him. In the Ford Factory there are abundant opportunities for men to exchange their jobs. But the men are not at all inclined to avail themselves of these opportunities. Most of them prefer to stick to their own jobs rather than to trade with others. Then we must remember that the workman spends only eight hours in his factory work. Allowing eight hours for sleep and one hour or so for going to and coming back from the factory, he still has seven hours for himself. He can find something different to do in his spare times to offset the monotonous effect of his factory work. Moreover, the minute division of labor is a necessary evil of the modern factory system. To say nothing of other factors, the increase of population and the rise of the standard of living alone would make it necessary to have mass production. Mass production is im-

possible without the extensive use of automatic machinery and the minute division of the production processes. Unless we are willing to return to the domestic and the handicraft stage of economy, it is highly improbable that we can avoid repetition in our industrial system.

c. Personal contact between labor and management. When the domestic system prevailed, the master workman and his apprentices and journeymen worked side by side in their limited concerns. Labor and management were hardly separable. The advent of the modern factory brought into existence a wide gap between the employer on the one hand and the employee on the other. The bigger the factory, the more detached the two parties become. This is true in all big modern factories, and the Ford Motor Company is no exception. The company, in order to secure maximum efficiency in such an immense organization, has to routinize and standardize many processes in handling men. To the management, a workman is a badge number and very little else. Fortunately, the relation between the foremen and the workingmen is a very intimate one. The Ford foremen are promoted from the rank and file of the workmen. They know all the jobs under their supervision through personal experience. So they are appreciative of and sympathetic with the workers in their departments. A new man might be somewhat irritated by the rough language the foremen use when speaking to the men. One of the Ford employees told me that he disliked factory work because there was too much "helling." By this he meant that the foremen constantly shouted "What the hell?", when anything went wrong. But when one gets accustomed to factory usage, he can easily notice that the foreman's attitude is, on the whole, a friendly one. He uses profane language as a matter of deeply ingrained habit. Many foremen fraternize with the men and, in this way, they help to bridge the gap between labor and management.

### HOW THE AVERAGE FORD WORKMAN LIVES

During my two summers in the Ford Plants I made it my rule to live exactly like a regular Ford workingman. I not only roomed and boarded with them, but participated in almost all their social and recreational activities. I visited many of their homes and cultivated some very intimate friendships with them. In this section I shall endeavor briefly to describe the life of a Ford workman.

*1. Factory life.* A workman is, by regulation, supposed to spend eight hours every day in the factory. But as a matter of fact, he usually arrives from ten to thirty minutes before the work starts and leaves from five to fifteen minutes after the bell rings. Before he begins his work, he has to get his tools from the crib. After the work is over, he has to return the tools to the crib. He has to wash his hands and has to wait for his turn to punch his time card. All these things take time. Allowing from fifteen to twenty minutes for lunch and an hour or so for him to go to and come back from the factory on the street car or on a bus, it is safe to say

that he spends in connection with his factory work from nine and a half to ten hours every day.

The time allowed for lunch varies with different departments. Fifteen minutes is the usual practice with departments where they run three shifts. Half an hour is also common, particularly with repair men. The Company does not provide lunch rooms but has arranged with a lunch factory to send wagon-loads of box-lunches to the Ford Plants at prescribed times. The company fixes the price and inspects the contents of the box-lunches. A box contains three sandwiches, a piece of pie, a piece of cake, and an apple, a banana or an orange. The whole box sells for fifteen cents. Milk and confectionery can also be bought from the wagon at very cheap prices. At the signal of a bell, all men rush to the nearest wagon. They form a long procession so that each man can take his turn. After lunches are secured, they seek for any convenient place to eat their meal. Many of them eat with unwashed hands. Fortunately the contents in a lunch-box are wrapped in wax paper so that there is no fear of contamination. Those who have homes in Detroit usually bring their lunches to the factory in tin boxes. The contents vary with different individuals. In general, they are better than the box-lunches sold at the wagons.

The shift changes once every two weeks, or, in certain departments, once every month. The day shift usually begins between 7 and 8 a.m. and ends between 3 and 4 p.m. The afternoon shift begins between 3 and 4 p.m. and ends between 11 and 12 p.m. The midnight shift begins between 11 and 12 p.m. and ends between 7 and 8 a.m. In departments where they run three shifts and change once every two weeks, a man works a fortnight on each shift in every 42 days. This, according to a concensus of opinion of the workmen, is rather upsetting to one's system. One is compelled to change his living habits once every two weeks. The midnight shift is particularly bad for one's health. Owing to family duties or noise in or around the house, one cannot sleep very well in the daytime. This means insufficient sleep and all its attending evils. What makes the change of shifts worse is that it necessitates almost a corresponding change for the members of the family, particularly for the worker's wife. She has to attend to his food and to see to it that he gets up in time and to control the children in such a way that noise in the house may be minimized. As things stand now, there seems to be no way to remedy this situation. Since the company has invested so much in capital stock and machinery it would be very poor business to run only one shift and let the plant be idle for sixteen hours every day. Then in certain departments, where there are furnaces, it is absolutely impossible to avoid three shifts. It is necessary there to maintain a constant temperature. Periodic cooling of the furnaces would entail inconceivable losses. Moreover, the increased expenses chargeable to overhead maintenance and fixed investment would raise tremendously the production cost of a Ford car, and, consequently, defeat the purpose of making a cheap car,

which is the company's singular contribution to the public.

To return to the factory life of Ford employees, I must mention a few other facts of great importance. First of all, are the men terribly fatigued through hard work? To this question, I should say the man is fatigued, but not through hard work. This paradox needs some explanation. Practically all kinds of work that require much physical exertion are done by automatic machines. The company, we may say, has left nothing untried in the way of labor-saving devices. Overhead cranes are provided in nearly all buildings. Electric motors are installed wherever there is need for power to operate machines. Tools are so constructed that a minimum of application exerts the maximum of force. The position of the body and the movements of the hands have been, through years of experience, reduced to a definite form of procedure. Once the right procedure is acquired, all waste movements and unnecessary expenditure of energy are eliminated. Many men in the Ford Plants, however, get tired, not because they have too much, but because they have too little to do. The job of a machine tender, unlike that of an ordinary manual laborer, usually requires very little physical exertion. In many cases, he stands there watching the "Iron Man" work. He controls the switches, takes the readings of certain measuring instruments, and makes adjustment whenever anything goes wrong. Often it is his legs and not his hands that feel fatigued. The company requires everyone to stand up during the working hours. When the hands are not doing laborious work and the mind is not constantly occupied, it is quite natural that the feet begin to complain of the weight they are forced to carry. One of the workmen in a certain department said, when asked by the writer what he needed most urgently at the time, "Nothing but the freedom to sit down." This is certainly characteristic of the mind of most Ford workers in their working hours.

The description of factory life would be incomplete without inquiring into the attitude of the workman toward his job and toward the management. Jobs in the Ford Factory may be roughly divided into two classes,—regular jobs and miscellaneous jobs. By regular jobs I mean those that require constant attendance. The miscellaneous jobs are those that occur here and there and from time to time, and are done by those laborers who have no definite jobs. For illustration, a punch press or a milling machine usually requires a constant tender, whereas a heap of dirt, or a pile of bricks to be removed, is only an occasional occurrence and does not require a special man to be on the job all the time. A regular job is usually expected to turn out a certain prescribed amount of product every day. The workman is responsible for what the schedule of production requires. He is naturally more or less conscientious toward his job. He works steadily, whether or not the foreman is present. The laborer who is doing a miscellaneous job is entirely different. He has little or no sense of responsibility. He tries to evade his work in every possible way. I worked at

times with this class of workmen, and I had plenty of opportunities to observe how they contrived all sorts of ways to shirk work and to kill time. Once we were told to remove a heap of bricks with a wheelbarrow. An ordinary load consisted of about twelve bricks. One of the men had a wheelbarrow full of bricks. The heap seemed to have not less than sixteen. He told me to guess how many bricks there were. I said "Sixteen." He laughed and told me to count them. What should I find but eight bricks piled up in such a way that an empty space was left at the center, invisible from the outside. There were many other devices of this sort; but I need not stop to mention them here. I was constantly told by my comrades not to work fast. Whenever I happened to work faster than others, I immediately heard advice from all directions, such as "Take it easy," "Not piece work," etc. The miscellaneous jobs are not carefully supervised by the foremen. Whenever the foremen found the work slow, instead of hastening the workers they usually sent for more men. Such being the case, sometimes a ridiculously large number of men were engaged in a piece of work which could be done by half that number in less time.

The attitude of the Ford employees toward the company is, on the whole, very good. Here and there one may meet Bolsheviks and I. W. W's. But they are a negligible minority. The majority of the Ford workmen are fairly well satisfied with the existing state of affairs. They admire the ingenuity of Mr. Ford and the immensity of his organization. Some change in attitude, however, seems to have taken place this past year. Discontent is evident from the workmen's conversations. This is entirely due to the five-day-week scheme, which entails a serious loss in wages. Lots of men talk about quitting if the company will not take steps to adjust the wages. I noticed in several places this sentence on the walls: "More money or we quit." This is certainly something that the management should take into immediate consideration.

*2. Home life.* The Ford employees live under all sorts of conditions, from indecency to exquisite taste and refinement. The majority of them maintain a fairly high standard of living. An average Ford man may be described as follows: He is between thirty-five and forty years of age, a father of two or three children. His wife is somewhat, but not much, younger than he. She works hard at house-keeping and not infrequently gets a fairly good income through taking in roomers or boarders. He owns his house, or is paying for it on an instalment basis. If he does not own a house, he probably rents a whole flat. He has not only enough rooms for his household, but often one or two extra rooms to let. He has for furniture, carpets, davenports, comfortable chairs. He has a few pictures on the walls and a few books on his shelf. He probably has a piano or a Victrola. He has a telephone and sometimes even a radio. Of course his house is supplied with modern conveniences, such as water, gas and electricity. He owns a car, most probably a Ford. He and his family

have three square meals every day. They rarely have delicacies; but their food is substantial and fairly well-balanced. When he puts on his street clothes, he is hardly distinguishable from an average American business man.

If he is not married, he is most likely between twenty-three and twenty-eight years of age. He has no home of his own. He is probably rooming in a private boarding house, sharing a double room with some other workman. The room costs each of them from $3 to $4 a week. He eats in a restaurant, spending from $1 to $1.30 a day on his board. He has some savings in a bank. He contemplates getting into some business or getting married or both.

*3. Cultural life.* The average Ford employee, like the average American workingman, is almost destitute of any academic interest. He seldom has gone beyond the eighth grade. He has little or no interest in reading, except such things as concern his life immediately. He seldom goes to a library, attends a sermon, or listens to a lecture. His collection of books consists mainly of those antiquated grade-school textbooks he used to study while a pupil in the elementary school. He has no interest in art and no appreciation for music. So much for the negative side of this topic. To speak in positive terms, he reads newspapers every day without any interruption. He takes great interest in neighborhood gossip, in pool rooms and in drug stores. If he is a single man, he goes once or twice a week to concerts, burlesque, vaudeville, photoplays or public dances.

Meager as the cultural aspect of his life is, he appears to be a fairly intelligent and well-informed man. He has picked up, in the course of his life experience, a considerable amount of practical information. He is quite handy with mechanical things. He manipulates with some degree of dexterity electric appliances. He can do a fairly good job at painting, carpentering in and around his house. He knows a good deal about automobiles and can usually repair a car. He has some knowledge of business conditions, particularly in his own locality. He knows something about natural phenomena, such as weather changes, communicable diseases, common rules of personal and community health, etc. If we enlarge the term "cultural" to include all that is informational, the average Ford worker is by no means an ignorant individual, as one is apt to suppose him to be. Although he knows nothing of the "ologies," he is efficient in and contented with his world of practical experiences. Unlike laborers in other countries, where social classes are well marked, he never thinks himself insignificant in the presence of well-educated men. His attitude toward college men seems to indicate that he must be secretly saying to himself: "You have education; I have something else. We are equals."

*4. Recreational life.* In connection with home and cultural life, much has been mentioned which is more or less recreational in nature. To render this account complete, a few things will be added here. First of all, the majority of the Ford employees have cars. Many of them drive out in the late

afternoons or go away for week-ends. Many of them go fishing and swimming on holidays. They play tennis, baseball, golf and billiards. Most of the younger men frequent parks, theaters, and dancing halls. A rather perverted form of recreation is visiting the so-called "sporting houses" of which, I am told, Detroit has an enormous number,—greater than most of the big cities in the United States.

SUMMARY

In the foregoing pages industrial relations at the Ford Plants have been treated from two angles,—the labor policy of the company, and the life of an average Ford workman. The source of Ford labor supply is characterized by an almost complete absence of racial prejudice. The employment of substandard men and the equal treatment given to women have also been pointed out as unique features in the Ford Plants. Adequate provision for labor adjustment is evinced by depriving the foreman of his power to discharge a man, the readiness with which transfers are granted, and the appointment of a negro to hear the complaints of the colored men. Minimum wage is $6 a day and the rate of increase 40 cents at a time. "Lay-offs" are found to be rare, but vacation without pay is the practice at the Ford Plants. For training and education, two separate organizations are found,—the Henry Ford Trade School at Highland Park and the School Department at the Fordson Plant. Training for highly skilled men is the sole objective of these institutions; consequently, the educational benefits reach only a very small fraction of the Ford employees. Welfare work centers on cases of sickness and destitution; and its administration is entrusted to the Sociological Department. Toward unionism, an attitude of indifference characterizes the Ford employees and an attitude of non-recognition represents the policy of the management. Of the human element in industry, three phases,—speed, repetition and personal contact between capital and labor,—have been discussed. Speed is found to be less than is usually reported by casual observers, the conveyor system being used in only a few departments. The effect of repetition is also found to be less deplorable than it is generally expected. Men get used to it through a process of "negative adaptation." Personal contact between the employer and the employee is almost nil, but the intimate relationship between foremen and workmen serves to bridge the gap between labor and management.

Four aspects of the life of an average Ford man have been briefly described. A workman spends more time in connection with his factory work than is generally believed. Opinions concur as to the upsetting effects of the frequent change of shifts. Due to the extensive use of automatic machines, men get tired not from physical exertion, but from psychological effects. The attitude of a man toward his work varies with the nature of the job. Though the relation between the company and its employees has, on the whole, been very good, the recent five-day-week scheme, without being

accompanied by immediate wage adjustments, has introduced a serious cause for discontent. The majority of the Ford workers maintain a fairly high standard of living. At home, they are not entirely without modern comforts and conveniences. The average Ford worker lacks academic education; but the deficiency is, to some extent, made up by a considerable amount of practical experience. Various types of recreational activities are found popular among the Ford men. Some of them are perfectly wholesome; others need redirection.

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# Does It Pay to Change Jobs?

By Harry D. Kitson and Noel Keys, *Teachers College, Columbia University*

*Young men who seek vocational guidance frequently ask, "Which is better, to remain with one firm a long time and work up, or change about from one firm to another as better opportunities present themselves?" The answer to the question is always a guess. This investigation represents an attempt to provide facts on which to base an answer.*

A study was made of the vocational histories of 170 high grade male clerical workers, 20 to 31 years of age inclusive. The number of months they stayed on each of their last jobs was compared with the salary they earned on their last position.

First computations showed a low correlation of 0.23 between length of service record and salary. With the factor of age held constant, however, this correlation is reduced to 0.04. The authors conclude that increase in earning power is likely to depend on such factors as intelligence, initiative, local opportunity and the like, rather than on mere time-serving.

WHICH pays the young worker better, to stay with a single concern and work up in it, or to change with reasonable frequency as attractive openings offer? There are few questions with which the vocational counsellor is more frequently confronted, and few on which he has so little scientific evidence on which to base an answer. Which man is likely to be the farther advanced after a given period of years,—the one who has remained with one concern, or the one who has worked for several? Other things being equal, which will be drawing the larger salary?

Common opinion tends strongly to favor the former. In commercial circles the superiority of the worker who "stays put" is accepted as almost a truism. C. L. Cleaver voices this conviction when he writes in the *Magazine of Wall Street*,[1] "Other things being equal, the man who sticks to one city and to one company or line of work usually progresses farther." Length of service with one concern is even being used as a criterion of vocational success against which to check tests of vocational aptitude.[2] It is assumed that those who have held

[1] Cleaver, C. L. *The Home Maker's Soliloquy*. Magazine of Wall Street. Vol. 40, p. 1036. October 8, 1927.

[2] Bingham, W. V., and Freyd, M. *Procedures in Employment Psychology*. Chicago: A. W. Shaw Company, 1926, pp. 39–40.

their positions longer are the more satisfactory workers, or at least the better adjusted to their positions. Scores made by those of long service are compared with those made by men who have remained a shorter time, and the former are taken as norms to be applied to new applicants.

Some resignations of workers come as a result of action on the part of the employer. It is obvious that frequent releases of this type are a reflection on the competency of the worker, since employers would drop first those whose services they regard as least efficient and most easily replaceable. On the other hand, it is often the employee who takes the initiative in such moves and for reasons entirely creditable to himself. He may have elected to accept a better offer elsewhere, or may have found more congenial work with superior opportunities for advancement in some other location. In such cases, change might prove distinctly advantageous.

The present study attempts to obtain certain quantitative evidence which will throw light upon this issue. Do actual salary figures support the feeling among employers that those whose changes of position are more frequent are less competent workers? Is the young employee well advised to take warning from the adage of the rolling stone? Taken by and large, are the workers who have remained longer in successive positions drawing better or poorer salaries than those whose changes have been more frequent?

### METHOD AND RESULTS

Data for the present investigation came from a series of vocational histories gathered by one of the writers in a commercial employment agency catering to high-grade office workers.[3] The records of 417 male workers of this type were obtained, covering the last three positions held, provided their experience included that number. For each of these it was possible to ascertain:

1. The salary being drawn at the time of the study or in the position last held.
2. His age.
3. The average number of months' stay in the last three positions held, apart from such short term appointments as students' vacation employment.
4. The number of years of schooling received.

Taking current salary as a rough indication of vocational success, it would be possible to determine to what extent this tends to vary with each of the three factors,—age, schooling and length of stay in positions, the other two being equal. To permit of such a calculation by the methods of partial correlation, however, it is necessary first to determine that the relationship between each two traits is approximately rectilinear and similar throughout the range concerned. A plotting of the age-salary relationship disclosed that, from the ages of twenty to thirty-one inclusive, salaries tended to increase at a fairly constant rate. That is, the average salary of the thirty-one-year-olds was about as much higher than that of the thirty-year-olds as the latter was higher than the salary of the twenty-nine-year-olds, and so on. By thirty-one, however,

[3] Kitson, Harry D. *Vocational Histories of Office Workers.* Journal of Personnel Research, 1926, Vol. IV, No. 11.

many in the group appeared to have neared their maximum salary, so that the differences between successive age groups above thirty-one was much smaller. Limitations of the statistical procedure involved in partial correlation made it necessary, therefore, to discard the data for men above thirty-one. Those below twenty years of age were also disregarded since the conditions of their employment were not strictly comparable with the rest, being often interrupted by schooling, and so on. This left for purposes of the present study only those from twenty to thirty-one inclusive, a total of 170 men. Fortunately, however, these cover the ages at which men are most frequently applicants for employment and stand most in need of counsel on this point.

The comparatively wide range of ages, salaries, schooling, and average stay for the final group of 170 is given in table 1.

TABLE 1

*Range of salaries, ages, education and average stay in positions for the 170 male office workers studied*

| | LOWEST | AVERAGE | HIGHEST |
|---|---|---|---|
| Monthly salary last drawn | $55.00 | $161.25 | $350.00 |
| Age | 20 years | 25.8 years | 31 years |
| Length of schooling | 8 years | 13.4 years | 18 years |
| Average length of stay in each of last three positions held | 1 month | 11.3 months | 50 months |

TABLE 2

*Coefficients of correlations between each factor and each of the other three*

| BETWEEN — AND | SALARY LAST DRAWN | AGE | AVERAGE LENGTH OF STAY IN A POSITION | YEARS OF SCHOOLING |
|---|---|---|---|---|
| Age | +0.43 ±0.04 | | | |
| Average stay | +0.23 ±0.05 | +0.46 ±0.04 | | |
| Schooling | +0.11 ±0.05 | +0.25 ±0.05 | −0.17 ±0.05 | |

The extent to which each of the four factors tends to vary with each of the other three is shown in table 2. Thus the correlation of 0.43 between age and salary as contrasted with 0.11 between salary and years of schooling indicates, that among workers of this type, salary could be predicted more accurately from their age than from their education as measured by years of schooling (Difference = 0.32 ± 0.06). The negative correlation of −0.17 ± 0.05 between schooling and length of stay suggests (the coefficient is too small for statistical reliability) that those with the longer schooling change a little more frequently than the others.

Total correlations of this sort, however, do not answer the questions which we have in mind. These raw correlations are secured by treating together men of widely different ages and amounts of schooling. The correlation of +0.23 ± 0.05 between

salary and length of stay would suggest that those who stay longer in a position draw the higher salaries. But in fact this correlation may be due entirely to the circumstance that those drawing the higher salaries are the older and more experienced men who, by reason of their age, have had the opportunity to accumulate some fairly long tenures in their record, whereas the young beginners, who draw the low salaries, have not as yet had time for long service anywhere.

The statistical device of partial correlation enables us to determine the amount of correspondence which prevails between any two factors when the other two factors are held constant. These partial correlations are given in table 3. There we see, for example, that the originally low correlation of +0.23 between length of stay and salary dwindles to +0.04 ± 0.05 or virtually disappears entirely when we compare only men of like age and amounts of schooling. On the other hand, the negative correlation of −0.17 ± 0.05 between length of schooling and length of stay in a position *increases* to −0.33 ±0.05 when we compare only persons of like age and salary level.

TABLE 3

*Partial correlations between pairs of factors when the other two factors are held constant*

| BETWEEN — AND | SALARY LAST DRAWN | AGE | AVERAGE LENGTH OF STAY IN A POSITION | SCHOOLING |
|---|---|---|---|---|
| Age | +0.34 ±0.05 | | | |
| Average stay | +0.04 ±0.05 | +0.48 ±0.04 | | |
| Schooling | +0.02 ±0.05 | +0.35 ±0.05 | −0.33 ±0.05 | |

The almost total absence of correlation between average stay and salary when age and schooling are held constant apparently affords an emphatic answer to the question propounded, so far as it concerns the group here studied. As between "working up" in one concern and shifting from time to time there is no indication that either method possesses any significant superiority. It may be that those of short average tenure are of two types, —one group the constitutional rolling stones who profit not at all by their changes, and another group those who shift for good reason and to their own advantage. The latter group may offset the former, so that the total progress of the combined group is strictly comparable to that of the long-tenure men. But as to this we can only conjecture.

By employing the percentage equivalent for the coefficient of correlation proposed by Nygaard,[4] we may conclude from the partial correlations that in the group studied salary varies with or depends 27 per cent upon age, 2 per cent upon length of schooling, 4 per cent upon length of stay in positions, and 67 per cent upon factors other than the three named. Among

[4] Nygaard, P. H. *A Percentage Equivalent for the Coefficient of Correlation.* Journal of Educational Psychology, 1926, Vol. XVII, pp. 86–93.

the latter are probably individual differences in intellectual endowment, emotional equipment, personal appearance, health, home surroundings, chance opportunities, and the like.

In attempting to draw conclusions from any study of this sort care must be taken to bear in mind the limits of its application. It is evident, for example, that years of schooling shows no significant correspondence whatever with salary for the group here concerned. But it must be remembered that the present study is confined to a certain type of clerical worker, that no one in the group has had less than eight years of schooling, and that the average age is only twenty-five. It is entirely possible that at this stage the youth who has left school and entered business at an early age would be earning the same salary as the recently graduated college student in the same line of work, whereas at ages above thirty the college man might possess a marked advantage.

It should be remembered also that the men here studied were all, for one reason or another, candidates for new positions. The type of employee who has never changed or sought to change his position is not fairly represented. It is possible that the inclusion of a just proportion of such men would serve somewhat to increase the correspondence between salary and length of tenure, although nothing in the present study would suggest this.

Finally it must be borne in mind that with correlations, all of which are so low as these, 170 cases are too few to make minor differences reliable. Indeed correlations smaller than 0.20 may be entirely the result of chance sampling, so that a really adequate sampling would reveal no relationship whatever.

SUMMARY

A study of the vocational histories of 170 male office workers aged 20 to 31 inclusive and having attended school for periods ranging from eight to eighteen years reveals that:

1. Of the three factors studied, only age yields a significant correlation with salary when schooling and average stay in positions are held constant. Even it is very low. ($r = +0.34 \pm 0.05$.)

2. The popular idea that the young man who remains longer with a given firm will outdistance the one who changes more frequently finds no support from the salary figures of this group. The correlation between length of stay in last three positions and present salary is only $+0.23 \pm 0.05$, and this dwindles to $+0.04 \pm 0.05$ when differences in age are allowed for.

3. For the group in question, education as measured by years of schooling shows no significant correlation with salary. ($r = +0.11 \pm 0.05$, and partial $r = +0.02 \pm 0.05$.)

4. As might be expected, the older men show a marked tendency to change positions less frequently and to average longer in a given employ. ($r = +0.48 \pm 0.04$.)

5. There is a slight tendency for those of longer than average schooling to remain a shorter time in a given position. ($r = -0.33 \pm 0.05$.)

6. All three factors of age, schooling, and length of stay combined would afford a very poor prediction of any individual's salary. Factors not considered here must account for by far the greater part of differences in salary.

(*Manuscript received October 22, 1927.*)

# Newer Personnel Practices in Colleges

By William F. Book, *Indiana University*

*Dr. Book shows how personnel work in colleges arose to counteract the unfortunate effects of massed instruction, by giving each student more individual attention; and how college personnel departments are organized and what they attempt to do. He describes a study of the factors which determine success among college students, what adjustments the students themselves are making to these factors, and how this adjustment can be greatly improved and efficiency increased by principles imparted in a special "How to Study" course.*

INTEREST in educational personnel procedures in colleges and universities has increased so rapidly in the last five years that it is in danger of becoming a fad.

There are a number of reasons for this growing interest. One is the feeling recently expressed by President Burton that "the real business of the college and university is to develop personalities in its students that are capable of larger participation in life and of making large contributions to life." Such an ideal directs attention to the importance of personal work among college and university students. Another reason for this growing interest in educational personnel is the large influx of students into the colleges and universities after the close of the World War. This great movement of students to the colleges and universities raised many new administrative and educational problems. The large numbers of applicants, with their varying degrees of preparation and ability, necessitated some scheme of selection not needed before. The greatly increased enrollments also forced attention to the need for working out some plan that would enable an institution to take care of these students in a more personal and successful way than was possible with the methods in vogue when the enrollments were small.

While these important changes were taking place in educational circles, personnel management began to develop in industry, and child accounting began to be emphasized in the public schools. Following the personnel and placement work done in the army during the World War, vocational and educational guidance has had a wide development both within and without the school. In the colleges, special deans of men and women were appointed to look after the problems of individual students, and the colleges soon began to feel keenly the need of scientific assistance in making their programs more efficient and comprehensive. College

and university registrars began to collect personal data to supplement the academic records of students which had been thought sufficient before. Mental testing, because of its practical value in the war, began to be widely resorted to as an aid in selecting suitable applicants for admission. "Freshman week," which originated at the University of Maine, to introduce freshmen students more successfully into the life, traditions, and work of the college, has been adopted by a larger number of institutions. On the instructional side, the sectioning of large classes on the basis of ability has been successfully tried in a number of universities. In other institutions, aptitude tests have been employed as an aid in giving individual students more helpful educational advice. Orientation and "How to Study" courses for freshmen have opened new avenues of approach to the general problem of giving more personal and practical help to students by way of improving their methods of work and of adapting the college curriculum more helpfully to their individual needs.

The fundamental aim of all this work has been to offset as far as possible some of the evil effects arising from the massed instruction that had to be resorted to with the ever increasing enrollments. To this end the attempt was made to render a more effective personal service to every student (1) by attempting to select only the students who could profit by the instruction offered, (2) by giving those who were admitted a more efficient, and personal type of vocational and educational guidance, (3) by adjusting the curriculum and work of the institution more specifically to their individual needs, and lastly (4) by helping each student to adjust himself better to the traditions and procedure of the institution by special Orientation and "How to Study" courses.

### ORGANIZATION AND WORK OF THE PERSONNEL DEPARTMENTS

The machinery set up by educational institutions for accomplishing these ends is the establishment of a Bureau of Educational Personnel, and the appointment of a Director for the work. The work of this Bureau is of two sorts,—research, and personal work with students. The former includes a study of the best methods for the selection of applicants, the preparation of forms for keeping important personal data in regard to students, the analysis of the vocations usually entered by graduates of the institution as a basis for better vocational and educational advice to the students still in college, and a study of student methods of work.

The work with students usually takes one or all of the following forms: (1) selecting applicants; (2) making a study of present day vocational demands of individual students, recommending on the basis of the facts so obtained a program of training which fits both the needs of the students and the demands of the occupations for which they wish to prepare; (3) giving helpful information to the Placement Bureau about individual students so that each graduate may be voca-

tionally placed more nearly in accordance with his special capacities and training.

From this brief account of the organization and work of Departments of Educational Personnel it will be seen that their function is not to take the place of the work of college or university deans, the registrar, faculty advisors, or chairmen of the various committees, but to serve rather as a clearing house for these committees, providing them with important data for their interviews and personal work with students.

### PRINCIPLES WHICH SHOULD GUIDE THE WORK OF A DEPARTMENT OF EDUCATIONAL PERSONNEL

To give this type of personal service to college students we must have an exact knowledge of the facts. Too little attention has been given to determining the conditions which now exist among college and university students, and to the principles which should direct the personnel work. The workers in the field need to have a more definite idea of the kind of help which college students need in order to make the right kind of adjustment, not merely to the college and its work, but to the factors which determine their personal success in college and in later life. We should, by our research and by our personal work, help students make a better mental adjustment to the achievements of the race and to the college curriculum, as is now attempted in Orientation courses, and also try to improve their points of view and their methods of work.

This may be done (1) by helping each student get a clearer idea of the factors which really condition his success in college and in later life; (2) by determining what the situation now is among college students in regard to their adaptation to these essential elements in a successful life; and (3) by helping the students collectively and individually make a more helpful adjustment to the factors which really determine their individual success. We shall, therefore, in this article, first inquire what these factors are, and then point out what adjustments college students are now making to these elements in a successful life.

### ESSENTIAL ELEMENTS IN A SUCCESSFUL COLLEGE AND LIFE CAREER

All would probably agree that the value of a life depends, in the first place, upon the character of a person's ideals or upon his purposes and plans, for these determine, not only the course which his activities and energies will take, but serve as a more or less constant incentive for the release of his energy and power. The personnel director and his group of specialists should, therefore, make a study of the springs of human action and the motives which are dominating the reactions of college students today.

A second factor which helps to determine one's success in college and in later life is the *strength* of his purposes and the constancy with which these objectives can be held in mind. To succeed with his work, a student must earnestly want to succeed and know just what he is trying to do. Most students who fail in their college work, and in later life, do so because their energies are dissipated or applied

to too many things. They do not follow their purposes closely enough or constantly enough to execute their plans. Research should therefore be directed to the problems in this field and all the practical work conducted in a manner that would give students some practical help on these important points.

A third basic principle which helps to determine a student's success in his life and college work is the store of energy which he has at his command. Much depends upon the energy and health which he possesses, upon how well he can conserve it, upon how well he has learned to make provision for restoring this energy when exhausted by indulgence in recreation, enjoyment, or actual work. We should, therefore, know what adjustments college students are making to this important group of factors today, and how they may be helped to make a more practical adaptation to this important element in their personal success.

A fourth factor operative in determining personal success is one's ability to save his time. The budgeting of a student's time, the kind and amount of planning which he does, and the adjustments which he is making to this important group of factors should be accurately determined since they play such an important rôle in his present and future success.

Lastly, personal success is conditioned by one's past successes or by the habits of thought and work which he has already acquired. Each student's high school record and his previous successes in college should, therefore, be determined because they will show what he is able to do with his present working load. Much also depends upon the knowledge and skills which a student has already acquired, or upon the power which he has developed to use both his energy and time in an effective way when confronted by his tasks. Specific record blanks, various forms of tests, and new methods of measurement should, therefore, be devised to record this important group of facts.

Making a suitable adjustment to these and other factors which determine individual success both in college and in later life constitutes a field of research and a type of practical service that is of far greater importance to college and high school students than merely trying to adjust them to the mental achievements of the past or to the college curriculum in an Orientation course. In fact, nothing about the personnel work is more important than the development of improved methods of work, and acquiring a proper point of view with regard to these and other factors which determine individual success. We shall, therefore, ask to what extent these needed adjustments are being made by college students today and the extent to which college students may be helped in adapting themselves better to these elements in their personal success.

### ADJUSTMENTS STUDENTS ARE MAKING TO THE FACTORS WHICH CONDITION THEIR SUCCESS

For the past four years the writer of this article has been making an investigation of students' capacities and their methods of work. In this

study, the attempt was made to isolate some of the more important factors which determine success among college students; and to determine what adjustments college students are making to these basic elements in a successful college and life career. Simultaneously with this work various plans were tried to help students improve, not only their attitude and point of view, but their methods of work.

The results of these investigations, and a detailed account of the attempts made to give various groups of college students this type of help, have been set forth in detail in a recent book.[1] Here we shall give only a few of the results of this larger study, hoping that the mere listing of the problems investigated and our enumeration of a few of the more important results may be of interest and some assistance to those who are trying to place the personnel work now being done in high schools and colleges on a more helpful basis.

*1. Ability of college students to budget and save their available time.* The first problem studied was to determine how well college students are able to save and profitably use their available time. By obtaining from 3500 students a working schedule for a normal week, showing just how they spent their total time, we determined the amount of time they spent each week in study, in laboratory and class, in sleep, in recreation and play, at meals, on outside work, on student activities, and how much time per day and week they wasted or lost. It was found that the girls devoted more time to study than the boys. The median number of hours spent in study per week was 34, for the girls, and 31.6 for the boys. The girls also made more credits and credit points. The range in time devoted to study per week varied from 10 to 65 hours. Sixty-six per cent of the freshmen boys and 51 per cent of the girls were found to be doing some outside work. These students devoted from 1 to 65 hours a week to these outside tasks. Students who were compelled to work to help pay for their education studied fewer hours per week than those who were not compelled to do any outside work. It was also found that the more hours they were devoting to outside work the fewer hours they spent in study. The boys working over 30 hours per week studied only 26 hours (median) per week. The girls working over 30 hours per week studied 30 hours per week. The boys not doing any outside work devoted an average of 34 hours per week to study, while the non-working girls spent 36 hours per week in study. It is also significant that these working students if considered as a group, were enrolled in as many hours of university work as the students who did not have to do outside work.

The working group, if taken as a whole, also ranked lower on the Intelligence Test than the non-working group. Some of the brightest students in each freshman class were, however, found among the working group. But notwithstanding the fact that the working group spent less time on study and ranked lower on the Intelli-

[1] W. F. Book. *How to Succeed in College.* Baltimore: Warwick and York, 1927.

gence Test, they, nevertheless, made as many credits and credit points as did the non-working group. A much larger percentage of the working group also completed their total enrollment in a way that was satisfactory to their instructors, a result clearly due to better motivation and to improved methods of work which necessity had forced these working students to invent.

It was also found that the most intelligent students in the freshman classes at Indiana University during the past three years studied the least, indicating that the most superior students need a type of direction which they do not now receive. Our study further showed that few college students have learned how to conserve or profitably use all their available time. According to their schedules, the average freshman spends, in a way judged to be unprofitable by himself, about 32 hours per week or 4½ hours per day. The boys waste more time than the girls. Some students according to their working schedules waste as much as 70 hours per week. A few wasted only 1 or 2 hours per week. It was further determined that the working students wasted less time than the non-working group, that upper classmen wasted on the average 3½ hours per day; and that even the most intelligent students had not learned how to deal successfully with the problem of conserving their total available time. Most college students, therefore, need help if they are to learn how to budget their time or to use it all in a profitable way.

*2. Ability of college students to conserve their energy and health.* Of still more significance, however, is the ability to conserve one's energy and health. This may be done (1) by taking short periods for relaxation during long stretches of continuous work on a difficult problem; (2) by taking the right kind and amount of exercise, or giving due attention to recreation and play; (3) by improving one's methods of work; (4) by caring for one's health; (5) by adjusting one's working load to one's mental ability, past successes, and physical strength.

Though our study showed that the average college girl could work on a difficult task only 1 hour and 45 minutes before becoming too tired to do effective work, and that this period was only 2 hours and 25 minutes long for the boys, it was found that this period could be extended to 7 or 8 hours by the average college student if 5 or 6 minutes were devoted each half hour to relaxation and rest. Notwithstanding this fact and the further fact that a large number of our students had this information, less than one per cent of the college students taking part in our experiments made any use of the principle, not even when they were preparing for their final examinations at the end of the term.

Nor was adequate attention given to the matter of conserving their energy by means of recreation and play. Only 18 per cent of the girls and 38 per cent of the boys were found to be taking any systematic exercise to keep their bodies and minds in the most effective working condition. Moreover, the forms of recreation taken and the amount of time devoted to it were found to be wholly inadequate for

keeping their organisms in the most efficient form. Nor was their energy conserved through improvements made in their methods of work. Most of our students did not even know that their methods of work could be improved. Those who knew did not know how to do it. It was also determined that little effective planning was done by the students taking part in our experiments. Only 22 per cent of the boys and 30 per cent of the girls made any systematic attempt at planning their work, and those who were attempting to plan their work had not learned how to do it effectively.

Since the highest type of success requires careful planning of one's procedure in advance,—including a listing of the things to be done in the exact order in which they are to be performed, making some study of these tasks to determine the time required for their performance and the best way to do each thing to be done, the making of a working schedule showing just what is to be done and when it is to be begun and finished, making proper arrangements for carrying out this plan, including the making of all conditions favorable for doing the work, preparing instructions for carrying out one's plans when finally made and seeing that the plan as made is promptly carried out,—much practical help must be given to most college students before a set of habits can be established that will enable them to work in this effective way.

The most serious drain, however, upon the energies of college students is caused by disease and violations of the laws of health. At Indiana University every possible precaution and general help is provided to care for the students' health. But our study showed that habits of healthful living were not being established by the 3500 students taking part in our experiment. We conclude that college students must be specially helped if they are to establish habits of taking the proper kind and amount of exercise, or develop right habits of eating, sleeping and the like. They are not able to learn unaided how to conserve and rightly use their available energy and time.

*3. Attention which college students give to the restoration of their energy.* How well the energy which students use in their daily activities and work is restored depends upon the kind and amount of sleep they take, the kind of food they eat, their ability to digest the food consumed, the attention they give to breathing, and the other means for restoring the energy consumed by their daily activities and work. It was found that most college students had not learned to make a proper adjustment to any of these essential elements in their personal success. The median number of hours devoted to sleep was 8.2, but many students sleep only 3 or 5 hours per day; others sleep 10 and 11 hours per day. It was also found that no regular habits for sleep had been established in the majority of cases and that the students who were carrying the heaviest working load were devoting the least time to sleep; while those who spent the most time in sleep studied the least.

Similar results were obtained in our study of the time spent at meals. In general, enough time was spent in eating, but a few students working their way through college had no

regular time for eating and were not taking regular meals. Only 19 per cent of the girls and 45 per cent of the boys took any time off after eating their meals. The rest go back to their usual activities immediately after the meal. Twenty-one per cent of the boys and 9 per cent of the girls stated that they were compelled to economize on their food and meals to remain in college, while 8 per cent of the boys and 5 per cent of the girls stated that they took only one meal per day.

The same situation exists with regard to the other means for restoring human energy, such as taking certain periods off for relaxation or rest, giving attention to correct breathing, etc. Our results showed that no attention whatever was given to developing proper methods of breathing or to establishing a proper alternation between the periods of work and rest. As a result, the bodies and minds of college students can hardly be expected to be kept in the most favorable condition for their thinking and work.

*4. Variations among college students in endurance and power to recover from fatigue.* As everyone knows, one's capacity for endurance not only determines his resistance to disease and death, but conditions his rate of learning and his ability to succeed with his work. The adjustments which college students are making to this element in their success is therefore important. Our results showed that some students can work at a difficult task less than an hour before becoming too tired to do effective work. A few of the students taking part in our experiment said they could work 7 or 8 hours before becoming too tired to do good work. Seven per cent of the boys and 6 per cent of the girls said they could work only one hour before becoming too tired to do effective work. Twenty-two per cent of the boys and 14 per cent of the girls said they could work at a difficult task for 3 hours before becoming too tired to do a standard grade of work.

There is need, therefore, for a new type of psychological measurement, one that will measure in a practical way how much stimulation a student can stand. Without this knowledge, the proper adaptation cannot be made to this important element in personal success. College students also need help to adjust their working load to their mental ability and physical strength. If this were properly done, fewer college students would have to go to a hospital to get the fundamentals of an education, after they had graduated from a college, sometimes with a *Phi Beta Kappa* key or a *Cum Laude* degree.

*5. Ability of college students to adjust their ideals and working load to their mental equipment and physical strength.* The usual differences in mental endowment were shown by the results obtained by giving our 3500 college students a standardized psychological test. In each freshman group there were a few students who ranked on the test at the 99th and 100th percentile level, more individuals who ranked at or above the 90th percentile level, about an equal number who ranked at or below the 10th percentile level. Most of the freshmen students whose methods of work we studied ranked in between these extremes. Taken as a group, the working students made a

lower rating on the psychological test than the non-working group. This was true for both the boys and the girls and suggests that the parents of the students who are compelled to make their own way through college by doing outside work are less able to provide sufficient means for the education of their children than the parents of the non-working groups. The students who ranked at the highest levels on the Intelligence Test made the most credits and credit points. This was true for both the boys and the girls, and also for the working and non-working groups. Only 20 per cent of the students ranking below the 25th percentile level on the Intelligence Test succeeded in doing satisfactory work.

But other factors besides mental ability were found to play an important rôle in determining academic success among college students, such as their methods of work, their attitude towards their tasks and work, their ability to read, former successes or failures, how well they had adapted their working load to their mental ability, past successes, and physical strength.

It was found that in deciding upon their working load, no consideration whatever was given either by the students or by their faculty advisors to differences in mental strength. Those rating at the lowest levels on the Intelligence Test were enrolled in as many hours of university work as those rating at the highest levels on the test. What is of still more significance is the fact that the 66 per cent of boys and the 51 per cent of girls who were compelled to do outside work to help make their way through the university were, if taken as a group, enrolled in as many hours of university work as the students not doing any outside work. These working students decide on their working load without any regard to their mental equipment or physical strength. One student ranking at the 12th percentile level on the Intelligence Test was enrolled in 17 hours of university work, and his working schedule showed that he was attempting to do 64 hours of work per week on the outside. Our data also showed that the students who were devoting as much as 31 to 70 hours per week on the outside, if considered as a group, were enrolled in as many hours of academic work as the students who were not doing any outside work at all.

It is also significant that the requirements made by the faculty are the same for all students regardless of their mental ability. The weakest students are gradually weeded out of the classes and out of the university because they cannot do the work. The most capable students are permitted, even encouraged, to do less than their best. In most institutions the most capable freshmen are not permitted to take extra work, and no regard is given to the habit of success which these students have already established in their previous work.

These and other results obtained in our original study indicate that the working load of college students should be adjusted more nearly to the student's mental ability and health. Superior students should be enrolled in more than an average amount of work if their high school record shows that they have developed a habit

of succeeding with their work. Professors should use the ratings made on a reliable intelligence test to guide them in evaluating the work of their students more justly and accurately. The best adjustment would, of course, be some such scheme of dividing students into sections on the basis of mental strength, as is now in vogue in a number of universities. All administrative problems involved in making suitable adjustments to these differences in mental endowment could be solved if the need for them were clearly enough seen and felt.

*6. Deficiencies among college students in ability to read.* It was found by making a careful study of the reading ability of 900 freshmen and 214 upper classmen that one of the chief causes of failure among college students is their inability to read. It was found by giving these students two types of reading test, one for measuring their power of comprehension, the other to measure their ability to prepare a standard reading assignment, that the average freshman student was able to note and master in his reading only 34 to 43 per cent of the important points which the author made in the assignment. The poorest readers in the group got only 3 per cent of the points; the best readers got 85 to 94 per cent of the important points made by the author read. Most of these handicapped students did not know that they were deficient in their ability to read. It was further found that some students who ranked as high as the 76th percentile level on the Intelligence Test were grossly deficient in ability to read. In fact, one student whose intelligence rating placed him at the 74th percentile level could read 7½ times as well as another member of his class who ranked at the 76th percentile level on the Intelligence Test. Other classes revealed still greater individual differences in ability to read. In power of comprehension, it was found that the median score was only 53 per cent for the freshman girls and 51 per cent for the boys; and similar differences were found with regard to the rate of reading. Eight per cent of our total groups finished the passage to be read in the test, but an equal number of freshman students covered only 20 to 30 per cent of the passage in the time devoted to the test.

With such variations in ability to use one of the most important tools for getting facts, it is clear why many college students fail to do satisfactory work. They must be shown by actual measurement how deficient they are in this respect and how they must proceed to improve their skill in this art.[2]

*7. Standardizing one's equipment and the conditions under which one works.* Our study further showed that college students pay little attention to this factor in their personal success. Few students have established a time and place habit for study. They do not realize how much effect this set of conditions exerts upon their ability to release and to direct their energy. Too little attention is also given to securing suitable equipment in the way of supplies and books. College students should, therefore, be made to

[2] Cf. *How to Succeed in College*, pp. 164–178.

see the importance of making and keeping this set of conditions as favorable as possible.

*8. Students' ideals and the directive forces which dominate their lives and work.* In our study of the motives and ideals which direct college students' activities and thought, it was found that the vocational motive was dominant. About 83 per cent of all the students who entered Indiana University during the last three years expressed a definite vocational motive as the chief reason for coming to the University. The girls and older students were dominated more by this motive than the freshmen, and those who ranked highest on the Intelligence Test had this vocational motive more definitely and strongly in mind than those who ranked at the lower levels on the Intelligence Test. Our study further showed that the students without a dominant motive to direct their energies and thought were doing a very poor or failing grade of work regardless of their ability, while those with a strong or definite motive were succeeding with their work.

It was also determined that 81 per cent of the freshmen girls and 59 per cent of the boys taking part in our experiments regularly attended church, and that the brightest of these students went to church in larger numbers than did those who rated at the lower levels of the Intelligence Test. It would seem, therefore, that the interest of these brighter students in religion and in the social institution of the church is an indication of the character of the ideals which are dominating their conduct and lives.

But marked individual differences were found in regard to the strength and character of the ideals which are dominating the reactions of university students. Some boys spend as many as 65 hours per week on outside work in order to remain in college. They are willing to live in undesirable quarters, economize on their meals, cut down on their sleep, forego all the social pleasures associated with college life, merely to get a chance to remain in the university and prepare for what they want to do. The fact that these working students are taking practically the same amount of academic work as the regular students, and that they do on the whole a better quality of work, is proof of their purpose and greater interest in their work. Other students are merely marking time. They are dominated by the stimuli that come from their general surroundings rather than from some immediate or remote purpose of their own. Instead of utilizing their time and opportunities at college as a means for achieving some definite result, they are doing only so much work as is needed to "get them by" or to make a satisfactory grade. Others are dominated by the social life of the institution, by athletics, and other stimuli that come from their immediate surroundings. These facts make it clear that college students need to be shown how his motives and plans affect his reactions in life, how they help him to succeed, how right ideals are acquired, how such purposes and plans should be utilized, and how his immediate plans and life purposes should be coördinated in order that this important driving and directive force might be more fully and profitably utilized.

*9. Efficiency of college students'*

*present methods of work.* All would probably agree that the ability to release and direct one's energy and power, to select his tasks, to use all his energy and time in a successful way while doing his work, is the crucial point in personal efficiency and success. The ability to do this depends upon one's methods of work, upon his attitude towards his tasks, upon the kind of planning he can do, upon the extent to which the habit of success has already been established, and upon how well one is able to adjust his working load to these and other factors which determine his success in college and in later life.

The importance of determining a student's previous success has been generally overlooked. Yet it is one of the most dominant factors in determining the degree of success which he will be able to attain in his present and future work. It is, therefore, important to develop in college the habit of succeeding with everything which one undertakes. Great care should, therefore, be exercised to adjust one's working load, not merely to his mental ability and strength, but to the habits of success which have already been established. One of the saddest commentaries on our present educational work is the fact that the habit of failing with one's work is built up in the lives of so many students in school. Our study of the academic success of various groups of college freshmen revealed the astounding fact that only a little over half of them are succeeding with all their work in a manner satisfactory to their instructors. The women are succeeding better than the men, for only 46 per cent of the freshmen boys and 63 per cent of the freshmen girls had no failures in their first semester's work. Some of the freshmen students failed in all their work. Eleven per cent of the boys and 6 per cent of the girls failed in as many as 9 to 17 hours of university work. The others failed in from 2 to 8 hours of their enrollment in the first semester.

An attempt was also made in our study to determine the best periods for study and work. Seventy-eight per cent of the boys and 80 per cent of the girls stated that they had noticed certain periods in the day when they could do more or better work, or do their work more easily than at other times. Ninety per cent of these students knew just when these periods came or when, as they said, they could release their energy more easily and direct it more effectively towards the things they wished to do. All of these students could locate this time definitely as to clock hours and knew just how long these better periods of work lasted. But notwithstanding this definite knowledge on their part, our study of their methods of work showed conclusively that only an occasional student is making any practical use of this knowledge, either in planning his work or in arranging the sequence of his tasks.

In many cases, students could not tell how they spent the time outside of their classes and admitted that extraneous circumstances determined almost entirely what they would do next or do at certain times of the day. In some cases, the matters of sleeping and eating were not even standardized, and no planning at all was done in con-

nection with specific tasks. Only an occasional freshman student was found who had a definite plan of work for the entire day. This means that instead of preparing their work at a definite time each day and doing their work on time, college students are inclined to neglect it from day to day and to try to make up for lost time when a test has been assigned or when some term report is due.

It was also found that these students prepared their daily assignments in the same haphazard way. As a result, they were seriously handicapped when it came to getting their facts. It was further determined that the same inefficiency of procedure showed up when it came to interpreting what they read. Here they proceeded in the same inefficient way which characterized their other work, completing a vicious circle that could result in nothing but inefficiency, loss of interest, and failure in their work.

*10. Ability to adjust their working load to the factors which condition individual success.* As already pointed out above, almost no variations were found in the academic load of the 3500 college students whose methods of work we studied. Even those who were compelled to work their way through college, if taken as a group, carried as many hours of academic work as those who only do their university work. A few members of this working group were spending as many as 70 hours per week on outside work. It was also found that no consideration was given to variations in their mental ability when their working load was determined upon. Students ranking at the lowest levels on the Intelligence Test were enrolled in as many hours of academic work as those who ranked at the highest levels on the test. Nor was any consideration given to deficiencies in reading or to the habits of success or failure which had previously been established. Too little attention was given also to the physical condition or health of the students when their working load is decided upon. Their endurance and power to recuperate from fatigue and their general working methods are not even considered, and no consideration is given to the ideals, mental attitude, interests, or motives which are stimulating and directing the activities of these students. In fact, no counsel whatever is given to students that would help them make the most helpful adjustment to these factors which in reality determine their personal success. The average student does not even know the rôle which these factors play in determining his success.

### NEED FOR A CHANGE OF EMPHASIS IN THE ORIENTATION COURSE

There is need, therefore, for a new type of educational personnel,—one which will give college and high school students help along all these lines. Most students need to be helped in adjusting their working load to these factors which in reality determine their present and future success. They need to be shown how to determine their mental and physical handicaps, as well as their points of strength. They need to be shown how to determine the extent to which the habit of success has already been established and the rôle which it plays in deter-

mining their personal success. They need to be shown how to measure their ability to read; how they must proceed to learn to read more effectively and rapidly; how important it is to keep themselves physically and mentally fit for their work; how to develop proper ideals, how to strengthen their interests; and how to coördinate their immediate and ultimate purposes or plans. Such instruction would enable college students not only to improve their methods of work, but help them to establish the habits which alone result in the type of living and work that will insure their personal success. Can such remedial instruction be given?

### SOME RESULTS OBTAINED IN A SPECIAL "HOW TO STUDY" COURSE AT INDIANA UNIVERSITY

For the same reasons that we do not require or expect a prospective physician or lawyer to master unaided the lore and skill of his profession, we should not expect college or high school students to learn by sheer experience or by the trial and error method used by the race to make its slow and laborious advancement in every field, how to conserve their energy and time or how to use both most effectively when confronted by their tasks. We should not expect them to learn unaided how to make use of ideals or specific purposes and plans, how to make an effective analysis of their tasks to find the best way of performing them, how to master the higher phases of the art of reading, or even how to make the conditions under which they must work most helpful for doing the things which they have to do.

When the writer attempted to give to four groups of college students in a special "How to Study" course some practical and personal help along the lines indicated in this paper, some very marked results were achieved. By giving these students help in planning and budgeting their time, their average efficiency in ability to conserve and profitably use their total available time was increased from 76 to 96.1 per cent in two classes; in a third class it was increased from 84 to 98.3 per cent. The habit of carefully planning one's work and the habits involved in the execution of one's plans can, of course, not be established during one semester, but a genuine interest in this element of personal efficiency was aroused and a marked and measurable amount of improvement was made. Moreover, a method was given to each student that enabled him to measure his own efficiency in this respect, or to determine by objective measurement just how much progress he had made, and how inefficient he still was in his ability to use his total available time.

In the matter of learning to read, very marked improvements were obtained. After being instructed what they must do to improve their methods of reading, and after giving them some practice in the process, and measuring the advancement actually made, after two different four-week intervals of practice with the method, the reading ability of two sections, taking into account both their speed and accuracy, was increased 102 per cent. Their

ability to prepare and report upon a standard reading assignment was improved 37.2 per cent.[3]

One of the chief gains from this remedial instruction was the marked improvements that were made by these students in their university work. Former failures were turned into successes. More credits and credit points were made by the same students after the practice in planning was given them than they made before. They became more interested in their work and in improving their methods of work. One student who enrolled in this course in the second semester of his sophomore year had made nothing higher than C+ in any of his work, with a goodly sprinkling of D's. In the next semester his grades were mostly B's and A's and in his senior year he made nothing but A's. He attributed this success largely to the help he obtained in the "How to Study" course.

Four classes who took the work as a regular two-hour elective course made an average of 4.17 more credit points per pupil during the semester they took the course than these same students had ever made before in any semester. The semester after they took the course, these same 76 students made an average of 6.46 more credit points per student than they ever had made in any semester before they took the course. One student who had never made more than 18 credit points in any semester before he enrolled in the course, made 41 credit points the semester he took the course and 44 credit points the next semester.

Better results still were obtained from 67 students who were given some formal instruction along these lines throughout the year in connection with their regular Psychology course. They were taught by two different instructors and made 4.63 more credit points per pupil the first semester than they had ever made before. The second semester they made 6.56 more credit points per student than they had ever made before. The freshmen who received this instruction made an average of 20.8 credit points per pupil the first semester they took the course, while the average number of credit points made by the entire freshman class in the university in the same semester was only 16. The next semester these same 43 freshmen made an average of 23.65 credit points per pupil, while the average credit points for the entire freshman class during the same semester was only 15.85.

What was still more significant, perhaps, was the fact that 87 per cent of the freshmen enrolled in this "How to Study" course completed their total enrollment in the university in a way that was satisfactory to all their instructors, while only 46 per cent of the entire freshman class of boys and 63 per cent of the girls were without failures in any course.

When it is remembered that about half of the students in these "How to Study" classes were on probation because of their past failures, which, of course, greatly decreased their chances for success, the value of the remedial instruction on learning how

[3] Cf. *How to Succeed in College*, pp. 157-178.

to work in a more effective way is still further emphasized, because it is more difficult to help those who have already developed the habit of failing in practically everything they have attempted to do.

Marked improvements were also made by applying the principle of planning to other factors which lie at the very basis of one's success in college and in later life, such as getting the students to plan more definitely for the conservation of their energy and health, to plan for the full restoration of the energy used in their recreation and work, to plan to make a more effective use of the principle of ideals, getting the students interested in developing a method of work that would insure more definite and continued improvement in this type of learning, etc. One of the most important results of this instruction was to get these students definitely interested in a plan of life and work that will insure the establishment of the particular habits that must be formed if the highest personal efficiency in their work and life is to be achieved.

These and other results can be obtained by means of personnel work, if attention is sharply directed to the factors which really determine one's personal success. We should not expect college students to learn these things for themselves, for even if they were bright enough to learn them unaided, much time and energy would be wasted in the process as the results enumerated above so clearly show. We conclude that the personnel work with students which is now receiving so much attention in the colleges and high schools of the country should be more sharply directed towards the giving of personal help along these important lines.

(*Manuscript received July 29, 1927.*)

# Do Teachers Improve with Experience

By J. E. Bathurst, *Bureau of Public Personnel Administration, Washington, D. C.*

*Mr. Bathurst has found that the efficiency of high school teachers is not significantly related to age and experience. Apparently a heavier responsibility lies on college training, since it is only there that teaching efficiency is absorbed. Or is the fault one of selection, and should we train only those who can demonstrate an aptitude for teaching as well as a capacity to develop with age and learn by experience?*

*Mr. Bathurst's findings have far-reaching implications for selection and training in the teaching profession.*

Age and experience of 171 high school teachers were compared with scores in the Aptitude Tests for High School Teachers, by Bathurst, Knight, Ruch and Telford, which were used as a measure of teacher efficiency. The zero order coefficient of correlation (1) between experience and score was 0.15 (P.E.$_r$ = ± 0.050); (2) between age and score, 0.06 (P.E.$_r$ = ± 0.058); and (3) between age and experience, 0.88 (P.E.$_r$ = ± 0.014). Teacher efficiency decreases slightly with age if experience is kept constant, and increases slightly with experience if age is kept constant.

THIS investigation was made to determine the relation of teacher efficiency to teacher experience and teacher age among high school teachers.[1] It was the aim of the investigation to answer the following questions: Does teacher experience result in a greater degree of teacher efficiency; if so, how much? Does the age of a teacher affect his efficiency; if so, to what degree? To what extent are experience and age factors of teacher efficiency?

The validity of the results of the study depends upon three factors, namely, the validity of the criterion used, the procedure utilized in securing the data, and the method of handling the data.

### THE CRITERION

The criterion used in determining teacher efficiency was the score in the Aptitude Tests for High School

[1] The investigation described here is a part of an extensive and intensive investigation which was made to determine the various factors of teacher ability. Funds for the extensive investigation were furnished by the Bureau of Public Personnel Administration, Washington, D. C. The schools and superintendents coöperating in this study will be duly acknowledged in a report to be published in the official organ of the Bureau of Public Personnel Administration.

Teachers, Set 1, by J. E. Bathurst, F. B. Knight, G. M. Ruch, and Fred Telford. An extensive study had been previously made to determine the predictability or validity of these tests relative to high school teachers. It was found, experimentally, that the tests predicted teacher efficiency among high school teachers when based upon the judgments of superintendents and supervisors who had actually observed the teaching efficiency of each teacher judged for at least one school year, to the extent of a raw correlation of 0.54 ± 0.034. When corrected for attenuation, this coefficient becomes 0.75. This raw coefficient of 0.54 predicts high school teacher efficiency to a degree 3.5 times greater than the weighting of such factors as grades in high school, grades in college courses other than professional, grades in professional courses, grades in practice teaching, scores in an intelligence test, and physique predicts elementary teacher efficiency, as shown by Whitney's study.[2] According to Whitney's study, the multiple correlation of the above factors with elementary teacher efficiency was 0.288. "Teacher efficiency" was determined by judgments of school officials. The reliability of the Aptitude Tests for High School Teachers is 0.80. At the present time we know of no technique or method which will predict teacher efficiency among high school teachers to the same degree as the Aptitude Tests for High School Teachers.

[2] Whitney, F. L. "Predicting of Teaching Success." Journal of Educational Research, 1923, 7, 420–428.

## PROCEDURE

The Aptitude Tests for High School Teachers were given to teachers of fifteen school systems which were located in four different states. Both large and small school systems are represented in this study. The tests were given to one group in each school system. This group was considered a sampling of the teachers in that school system. Since the tests used were standardized, the standard method of administering the tests was used in all school systems.

Table 1 gives in brief the nature and organization of the tests used. As standardized, the six tests compose one test booklet.

Due to the failure on the part of some of the teachers either to give their age or the number of years of teaching experience some of the booklets had to be discarded. After this sifting process, one hundred and seventy-one test booklets remained. The standard method of scoring the tests was used.

## EXPERIMENTAL RESULTS

Table 2 shows the total range ($R$), mean ($M$), probable error of the mean ($P.E._m$), number of cases ($N$), and standard deviation (S.D.), of the distributions of age in years, experience in years, and scores on the tests of the teachers.

From this table it will be observed that the total range and the mean are sufficiently large to give significance to the results obtained. The number of cases is sufficiently large to make the probable error of the mean compara-

tively small and to give significance to the results obtained. The standard deviation is also sufficiently large to result in a high correlation if relationship exists between the distributions.

Table 3 gives the various zero order correlation coefficients, the probable error of each coefficient of correlation, and the various partial coefficients of correlation.

It will be observed that the zero order coefficient of correlation between experience and score is three times its probable error. A coefficient of correlation must be at least three times its probable error to have any significance and should be five times its probable error to have much weight. This coefficient, therefore, means that the teaching experience of a teacher, after the first year, has very little relationship to the efficiency of that teacher. The zero order coefficient of correlation between age and score is 0.06. This coefficient is not significant since it is only a little greater than its probable error. This means that the age of a teacher has no significant relationship to the efficiency of that teacher. A high positive correlation between age and experience is, of course, to be expected. It is 0.88.

The causal relationship with which we are most concerned may be determined by the technique of partial

TABLE 1

| TEST NUMBER | TEST NAME | NUMBER OF ITEMS | TYPE OF ITEMS | HOW SCORE IS DETERMINED |
|---|---|---|---|---|
| 1 | Professional Judgment | 28 | Multiple Response | Rights |
| 2 | Theory and Practice of Teaching | 85 | True-False | Rights minus wrongs |
| 3 | Reading Comprehension | 25 | Varied Response | Rights |
| 4 | Social Information | 24 | Multiple Response | Rights |
| 5 | School and Class Management | 55 | True-False | Rights minus wrongs |
| 6 | Professional Information | 33 | True-False | Rights minus wrongs |

TABLE 2

| | *R* | *M* | P.E.$_m$ | *N* | S.D. |
|---|---|---|---|---|---|
| Age | 34 | 29.7 | 0.40 | 171 | 7.85 |
| Experience | 35 | 7.3 | 0.33 | 171 | 6.47 |
| Scores | 174 | 115.1 | 1.84 | 171 | 23.98 |

TABLE 3

| | EXPERIENCE | P.E.$_r$ | AGE | P.E.$_r$ | EXPERIENCE OUT | SCORE OUT | AGE OUT |
|---|---|---|---|---|---|---|---|
| Score | 0.15 | ±0.050 | 0.06 | ±0.058 | −0.154 | 0.891 | 0.205 |
| Experience | | | 0.88 | ±0.014 | | | |

correlation. It will be observed that when the factor of experience is kept constant the correlation between age and score is −0.154. This coefficient is 2.3 times its probable error. This correlation is therefore not significant. This means that the factor of age has no significant effect upon the efficiency of a teacher. When score is kept constant the correlation between age and experience is high, which is to be expected. When age is kept constant the correlation between experience and score is 0.205. This coefficient is 4.1 times its probable error. The coefficient therefore has slight significance. It means that the factor of teacher experience has a small effect upon the efficiency of a teacher.

By way of summary, this study shows that teacher efficiency among high school teachers decreases slightly with age when age is independent of experience and increases slightly with experience when experience is independent of age. The zero order correlations show that the measurable increase of efficiency due to both age and experience is so slight as to be negligible. The partial correlations show that the decrease due to age and the increase due to experience are so slight as to be also negligible. The study would suggest that we must look for factors other than age and teaching experience if we would find those which constitute teacher efficiency among high school teachers.

*(Manuscript received July 21, 1927.)*

# Book Reviews

## MIND AND PERSONALITY

*By William Brown. New York: G. P. Putnam's Sons, 1927. Pp. 356*

REVIEWED BY GRACE E. MANSON

We commend to all major students in the departments of psychology, philosophy, and biology, to all graduate students in these departments, and to all persons teaching in any of these fields, this volume by William Brown. The author, an academic psychologist, a practicing psychotherapist, as well as a skilled biometrician, has attempted the difficult but very necessary task of considering the developed human mind scientifically from the points of view of biology and physiology, of the various schools of psychology, logic, ethics and metaphysics, and finally from the point of view of the theory of religious experience. The purpose, obviously, is to build up some sort of a system which will harmonize opinions which seem to conflict. The reader may not always agree with the author in his method of effecting harmony. He may not have as much confidence as Dr. Brown in the method of "deep analysis," he may not agree with the teleological viewpoint, but he must be exceedingly grateful for the author's scholarly review of the many viewpoints involved and the skill he has shown in synchronizing seemingly unrelated material.

## ECONOMICS AND HUMAN BEHAVIOR

*By P. Sargant Florence. New York: W. W. Norton Company, 1927. Pp. 95*

REVIEWED BY Z. CLARK DICKINSON

Dr. Florence will be remembered as the author of an economic dissertation, in the Columbia University Studies, on *Use of Factory Statistics for Investigating Industrial Fatigue*, as well as a number of other excellent publications combining practical and theoretical approaches to problems of fatigue. In recent years he has been lecturing in the University of Cambridge, where he produced his *Economics of Fatigue and Unrest*. The volume here reviewed, on general relations between psychology and economics, is of less immediate concern to personnel people than the other works mentioned above; yet it does present, in a highly condensed form, with admirably clear and refreshing rhetoric, some important considerations on the joints between two fundamental personnel sciences,—or, rather, on the common ground which workers from both sides cultivate.

The sensational pronouncements of McDougall and Carlton Parker, prophesying that economics would be turned upside down by the social psychology of instinct and complexes, are well known; they are our author's point of departure. It is also common knowledge that professional psy-

chologists are not quite as confident as formerly concerning their knowledge of instincts; the trend is perhaps still toward the environmentalist emphasis which Watson has recently broadcast. Echoes of this state of affairs, of course, gladden the hearts of numerous economists, who think that quite enough breath has been wasted on talk about psychology which seems to get us nowhere.

Dr. Florence, however, occupies a middle ground, and he has achieved here a statement which is uncommonly judicious. He has little difficulty in convincing any teachable economist that most of the claims about radical damage done to economics by new psychology are ill-founded. (All his readers are bound to be economists; because he has thoughtfully provided a first chapter indicating what "orthodox economics" actually does teach.) On the other hand, he is able to admonish some of our ablest economists, who have maintained that economics is completely independent of psychology, that they go too far. It happens that the psychological assumptions of orthodox economists are sounder, or at least are more useful for economic interpretation and prediction, than those which have been brandished about by many of their critics. A young man with a date for the Junior Ball, for example, must have taxi service at almost any price; his demand is very inelastic, and very likely is explicable by the apparatus of McDougall and Freud. But taxi-drivers do not invariably exact, even from such customers, the last farthing they would be willing to pay rather than go without, or haggle about the matter; like most others, taxi prices are held in check by "marginal" purchasers who do calculate and bargain. (To be sure, the degree of abstraction which is necessary to many phases of economic analysis, assuming "perfect competition," and so forth, have an air of unreality—analogous to that of geometry—which enables the psychological dissenter to say that the economist's wood is not like any trees that mortal eyes e'er beheld. Doubtless this circumstance insures us a perpetual supply of dissenters.) But our author goes beyond this validating of considerable parts of orthodox economic psychology. He indicates how much may be gained even now (and still more through inductive researches in the future) from further contacts between the two sciences. He utilizes a moderate sort of behaviorism, like that of Bertrand Russell, to suggest refinements of economic terminology which relieve us of excess baggage in the way of doubtful or false psychological and ethical implications; and he makes some acute generalizations to the effect that psychological economics is very much in the making, as statistical and other inductive studies (on labor turnover, for instance) accumulate. The following brief passage is perhaps an average sample of his style and attitude: "I might suggest 'Cycle-Analysis not Psycho-Analysis' as a suitable slogan for this new economics, if this were not perhaps unfair to psycho-analysis as commonly understood. In its everyday practice this psycho-analysis starts and proceeds by the most intensive and patient observation, and is comparable to the old economics only when speculating philosophically beyond these observations upon Hamlet and human behavior generally, in fiction and fact."

## BUSINESS MANAGEMENT AS A PROFESSION

*Edited by Henry C. Metcalf. Chicago: A. W. Shaw Company, 1927. Pp. 389*

AND

## THE PSYCHOLOGICAL FOUNDATIONS OF MANAGEMENT

*Edited by Henry C. Metcalf. Chicago: A. W. Shaw Company, 1927. Pp. 309*

Reviewed by Forrest A. Kingsbury

These two volumes comprise the lectures in two of the "Courses for Executives"—those of 1925–26 and 1926–27, respectively—which have been offered annually by the Bureau of Personnel Administration in New York. They can be reviewed together, since in their inception, viewpoint, purpose and plan they are much alike, and in nearly half their bulk their authorship is identical. Looked at in one way, the second volume could be described as an elaboration of one phase of the first volume; for the "marks of a profession," which are described as being trained intelligence, application of scientific knowledge and technique to practical ends, the motive of service to the community, and loyalty to an ethical code, imply among other things an increasing recognition and use of psychological principles and methods in business management.

Dr. Metcalf, who is Director of the Bureau, has introduced each volume with a carefully digested summary of the lectures which follow. He has wisely refrained from attempting to "interpret" the concepts which the contributors have in their own papers, each in his own way, ably interpreted; but his introductions will be helpful to the reader in following the thread which winds its way through each volume, and which, because of diversity of authorship and treatment, would otherwise easily be lost at times.

Naturally, the prospective reader's first interest is in the list of contributors and the contribution of each. Dr. Metcalf displayed excellent directorial and editorial judgment when he chose that practical idealist, Henry S. Dennison, to give the opening lecture in each series, and the philosopher-psychologist, Professor H. A. Overstreet, to conclude them. The most extensive contributions are those of Miss M. P. Follett, who has provided nine of the forty chapters in the two books, Dr. H. S. Person who wrote five, and Professor C. S. Yoakum who contributes five papers to the second volume. The other authors are Dr. Elton Mayo, Professor Walter Rautenstrauch, Professor E. H. Schell and Mr. E. L. Heermance (2 papers each); Professor A. B. Wolfe, Mr. J. A. Garvey, Dr. W. V. Bingham, Dr. C. R. Mann, Dr. W. E. Mosher, Mr. E. R. Barton, Mr. A. E. Wiggam, Dean W. B. Donham (1 paper each); and a paper by Professor Overstreet is included other than the two concluding ones by this author. Such names as these guarantee that the reader will find much to stimulate reflection.

"Business Management as a Profession" is in no sense a text in Industrial Engineering. Its purpose is rather to reorient the entire management function in the directions suggested by the criteria of a profession, previously cited. It is not, therefore, so much the *technique* of management which the several papers stress, as it is the *relationships* of management—relationships to the older professions, to the basic sciences, to the community and social order. One is tempted to rename it, "The Philosophy of the Management Function."

"The Psychological Foundations of Management" is more concerned with the "how" of business management than with the "why," although it is made perfectly clear that the "why" in the minds of the con-

tributors is that implied in the earlier volume. The list of chapter headings reflects the present tendency of business psychologists to push their investigations far beyond the measurement of vocational aptitudes and fatigue studies. Problems of human motivation, personality analysis and measurement, mental hygiene, leadership, social relations and the like, long avoided by experimental psychologists because believed incapable of objective analysis and measurement, are no longer being left to the speculations of doctrinaires. Measurement techniques in these fields, while still crude and faulty, are being worked on, and have already made valuable contributions to our knowledge of the human factor in industry.

One who reads volumes of lectures like these does not look for unity and agreement in viewpoint, style, emphasis, or even opinion. It would be pointless, therefore, to review such divergencies or to criticize them. Indeed, this diversity is a virtue—a symptom of vitality and reality; for when a profession is in the making, as all agree that management is, many minds are better than one.

The remarkable thing is that there is so much agreement, and on propositions which a decade or two ago would have been laughed at by most business men, but on which today business men, philosophers and technologists can at least understand what the other is talking about. A decade or so ago, such books as these would not have been written; or if they had been written, they would have found few sympathetic readers among men of affairs. But today each symposium, shared in by men of diverse experience and position, makes an integrated picture, a bit blurred in detail, here and there, but each telling a perfectly definite story, and one designed to cheer the heart of anyone who believes that intelligence and humanitarianism do have a future in the ordering of the economic order. One cannot doubt that these two collections of papers will have their share in defining the problem of the future direction of business research, training, and organization.

## PSYCHOLOGY FOR EXECUTIVES

*By Elliott Dunlap Smith. New York: Harper and Brothers, 1928. Pp. 262*

Reviewed by J. David Houser

This book was written "in the effort to provide the executive with aid in understanding the human aspects of his problems so that he may effectively arrive at his own solutions." Its principal success would seem to be the excellent stimulation it offers subordinate executives who will read it carefully for self-analysis and self-discipline. Its principal weakness in justifying its title lies in the fact that so much of its material is so purely personal and individual in its implications and that it contains so few principles that may be applied in the formulation of actual personnel policies by chief executives.

Mr. Smith's psychology is eclectic but thoroughly dynamic. His choosing has been thoroughly adapted to the ends which he seeks to serve. With the wealth of illustrations drawn from industrial situations, a careful reading and study of the book should be of extreme profit in bringing a better understanding of his motives and acts to any individual in industry—or out of it, for that matter.

Particularly strong and discriminating is the latter part of the book, and equally so are the discussions of: bias, the forces of the personality, censorship and the functioning of the unconscious, rationalization, the wish and self-deception. Even a casual reading of the material on the worker's need for self-respect and the effects of its denial inspires the fervent wish that such a

statement might have the widest possible circulation in industry. It is an admirable scientific substantiation and explanation of Whiting Williams' splendid gospel.

A little of Mr. Smith's matter grows a bit discursive and might well have been abridged—that on habit and self-control, for instance. There are a few apparent over-generalizations. In certain places the work might have profited by better organization—by less discussion and an earlier crystallization into principles. Some of his generalizations grow a bit shaky, as, for instance, one in which he verges closely onto such a rather generally discredited theory as that of formal discipline: ". . . . Moreover, just as the habit of effective memorizing will apply beyond the special field and increase somewhat his general capacity to remember, so the habit of thinking resourcefully about matters to be attended to although formed in acquiring information in a special field, will carry over into other fields as a habitual mode of thought. A person's general power of concentration may thus be developed."

There has for long been such a crying need for what Mr. Dennison has called "an applied psychology of organization" and this material of Mr. Smith's is so promising in its possibilities for individual self-analysis and self-discipline that one regrets that it has not been more carefully organized to command attention and personal application. Succinct chapter summaries would have been useful, as would have been cases for discussion (of which the author doubtless has many) and suggestive questions. Whiting Williams' admirable cases in "Mainsprings of Men" could well have been taken as a model in this connection. Lacking this sort of material, a book of this kind tends to become merely another text.

As intimated before, however, the one thing which might have been done to have made the book a greater potential influence in a realm where such material is most needed—the thinking of chief executives—is the direct application of this subject matter to improved personnel policies which might be authorized and administered from the seats of ultimate power. For, after all, industrial unrest finds its ultimate cause in the quality of personnel practices which chief executives permit in individual organizations, and it is the philosophies of such men which should be the focal point for attack in any attempt to improve the industrial relations situation.

An illustration is found in Mr. Smith's treatment of the problem of the worker's self-respect. The need for this is admirably developed, but the implication seems to be that in some way either the worker himself or at most the foremen can remedy this situation quite satisfactorily if only each of them understand its psychological foundations and significance. Instead, if Mr. Smith's development of this subject could have proceeded to show the overwhelming need for the chief executive to formulate policies in connection with employment, wage payments, promotion, giving to individual workers a sense of the meaning of work they do, and so on, and for the rigorous supervision of the way in which these policies are carried out, the influence of the book might be considerably greater.

Appendix II presents a brief and discriminating selection of books on psychology for industrial readers together with a very helpful and thoughtful comment upon each. Appendix I is a few pages of advice on methods which Mr. Smith has found good in handling conference groups where industrial applications of psychology were discussed. This material is very much to the point. With "Psychology for Executives" used as a text with such groups and with such methods carefully observed, some exceedingly worthwhile results should ensue.

## TIME AND MOTION STUDY

*By S. M. Lowry, H. B. Maynard and G. J. Stegemerten. New York: McGraw-Hill Book Company, 1927. Pp. 378*

REVIEWED BY ORDWAY TEAD

This newest study of the technique of time and motion study is best characterized by saying that it proceeds throughout from the engineering standpoint. The authors write as practical operating executives whose experience has apparently been largely in situations where management policies were given effect by fiat rather than by conferences. In other words, the study is more effective in its exposition of technique than in its recognition of the mental hazards encountered in imposing this technique on the ordinary rank and file of workers. Whereas Lichtner, in his book on the subject, devotes considerable space to a careful statement of the ways and means of selling the manual workers on this method of analysis, the present writers almost take this for granted. This is true despite the fact that they inject such an important modifying sentence as, "The confidence and respect of the working force is so difficult to secure at the outset that introducing time study work with them should never be jeopardized by apparent laziness on the part of the time study man." The fact that there are a number of other important items besides the laziness of the time study man to care for in maintaining the confidence of the working force in this whole technique is hardly recognized. It seems, indeed, as if the more progressive and coöperative experience with the introduction of time study, reflected in such a recent volume as Hunt's *Scientific Management Since Taylor*, is either unknown to the present authors or deemed by them unimportant, since their treatment of the subject so completely ignores this phase.

Their discussion of incentive payment plans to utilize in conjunction with time study work is clear, sound and constructive. It represents the most recent trends in the application of incentive payment principles. Indeed the discussion of the group system of wage payment is one of the best available.

In short, it is to be regretted that a book which develops so much technique competence and which will no doubt have wide reference use among students of the subject should ignore as much as it does the human aspect of the problem. That writers on management subjects from the engineering standpoint need the cross-fertilizing influences of psychological study is borne out anew in this otherwise admirable volume.

## PERSONNEL RESEARCH IN DEPARTMENT STORES

*By The Research Bureau of Retail Training, University of Pittsburgh, 1927. Pp. 254*

REVIEWED BY DELOS WALKER

Anyone interested in learning about the activities of the University of Pittsburgh Research Bureau of Retail Training will find in this report a thorough exposition of its work during the period from 1918 to 1925. During those seven years the Bureau collected and edited a great amount of valuable information concerning personnel work in department stores.

The report summarizes under separate chapters the contents of various books and research papers written by members of the Bureau's staff. Subjects include Retail Selling, Merchandise Information, and

General Training for Salespeople and Buyers. The report also discusses Service Shopping and analyses the Administration of Personnel Activities. The Bureau's research in Non-Selling Departments appears complete only for the operation of a Bureau of Adjustments. Its work in the Departments of Receiving and Control seems almost negligible. No mention is made of any research in the fields of Cashiering, Packing, Delivery, and Storage. The fact that the report includes no work accomplished after 1925 may account for these omissions, as well as for the inadequacies of the chapter on Psychological Tests in Employing People. So much has been accomplished in the latter field since 1925 that it will be interesting to watch for later reports of the Bureau.

There is nothing very unusual or new in the report for any alert Department Store Personnel Worker. The Bureau's primary function is to prepare material and the report consists chiefly of outlines of experience in writing up research activities, and the description of the Bureau's books. In some respects it resembles a catalogue of information which may be studied in more detail and to better advantage in the books referred to the reader.

Although the report has a comparatively limited appeal, it will undoubtedly help the average educational department of any store. Its supply of ready-made information together with the methods of procedure in training retail employees will save the department store teacher much time and thought. It devotes many more pages to the Bureau's scientific methods of procuring information than to the best way of imparting it. However, this is probably a matter for the individual store to decide. My only quarrel with the Bureau's report would be its almost complete neglect of the non-selling phases of department store training. As far as its research in the field of buying and selling is concerned, the report is so clearly and simply expressed that it will prove a great help as a reference book for the teacher initiating new methods.

## THE PROBLEM OF VOCATIONAL GUIDANCE

*By George E. Myers. New York: Macmillan Company, 1927. Pp. 311*

Reviewed by Arthur F. Payne

This book will probably meet two kinds of reception, depending upon the type of reader. If the reader is the chairman of a committee of a Mothers' Club and has to write a paper on Vocational Guidance the book will prove to be very valuable. If, however, the reader knows very much about the present state and technique of guidance in this and other countries, or is a practitioner of guidance in any capacity whatever, he will find little that is new in the book.

The author apparently assumes that guidance is confined to public schools and practiced by school teachers or principals along with their other duties. He fails to recognize the need for the guidance specialist or for training for such specialists. Nothing is said about the splendid scientific guidance work being done in such Eastern institutions as is shown by the second Annual Report of the Guidance Department of the Hebrew Sheltering Guardian Society. The author evidently is unaware of the keen, searching, systematic work being done in guidance at such places as the State Penitentiary at Trenton, New Jersey, the Hebrew Orphan Asylum of New York City, the Children's Village, New York, the Camden (N. J.) Y. M. C. A., or the Guidance Clinics under the Commonwealth Fund, and many other similar organizations. Nothing is said of the work being done under the direction of the National Institute of Industrial Psychology in London, or of the splendid programs now in operation in Vienna, Berlin, and Brussels.

The author of this book is woefully behind

the times as regards the recent splendid advances in guidance in public schools and in other institutions.

On page 62 the author makes this statement, "Occupational Information A First Step in Guidance." Throughout the book we find very little about the analysis of the individual (which is always the first step), except an enlargement upon the possible values of the now thoroughly discredited self-analysis blanks.

Nowhere do we find any consideration of the absolute necessity of job analysis or of follow-up work, or of the great importance of introversion and extroversion in both guidance and placement. The very important question of emotional stability is dismissed with a superficial discussion of twelve lines.

As a source of information about jobs and their classifications the author is evidently unaware of the existence of such government publications as, "Index to Occupations, Alphabetical and Classified," and the U. S. Army publication, "Trade Specifications and Occupational Index."

Twelve pages are devoted to "Vocational Guidance in Colleges and Universities" in which we find no mention of such an important guidance unit as the Junior College. The important problem of the relation of orientation courses and the common freshman year to guidance is dismissed with a question of two and a half lines.

# New Books

BARTLETT, FREDERICK CHARLES. *Psychology and the Soldier.* New York: Macmillan Company, 1927. 231 p. $3.00.

BEMAN, LAMAR TANEY, comp. *Five Day Week.* New York: H. W. Wilson Company, 1928. 100 p. 90¢.

CALKINS, EARNEST ELMO. *Business the Civilizer.* Boston: Little, Brown and Company, 34 Beacon Street, 1928. 317 p. $3.00.

HALLE, RITA S. *Which College?* New York: Macmillan Company, 1928. 288 p. $1.50.

HEATH, A. E. *How We Behave; an Introduction to Psychology.* New York: Longmans, Green and Company, 1927. 96 p. 75¢.

HOLLINGWORTH, HARRY LEVI. *Psychology; Its Facts and Principles.* New York: Appleton & Company, 1928. 557 p. $3.00.

I. R. I. *The Elimination of Unnecessary Fatigue in Industry.* Holland: available at 130 East 22nd Street, New York, Miss Mary van Kleeck. p. 129. $1.00.

KOVARSKY, VERA. *La Mesure des Capacites Psychiques chez les Enfants et les Adultes, Normaux et Anormaux; la Methode du Profil Psychologique.* Paris: Librairie Felix Alcan, 108 Boulevard Saint-Germain (VI), 1927. p. 178.

KRATZ, JOHN AUBEL. *Vocational Rehabilitation in the United States; the Evolution, Scope, Organization, and Administration of the Program.* Washington, D. C.: Government Printing Office, 1927. 103 p. Apply.

MACIVER, ROBERT MORRISON. *Community; A Sociological Study.* New York: Macmillan Company, 1928. 472 p. $5.50.

MCKAY, HERBERT. *Educate Your Child.* New York: Oxford University Press, 1927. 144 p. $1.00.

MONROE, WALTER S., AND ASHER, OLLIE. *A Bibliography of Bibliographies (of Education).* Urbana, Ill.: University of Illinois, 1927. 60 p. 25¢.

ODELL, CHARLES W. *Predicting the Scholastic Success of College Freshmen.* Urbana, Ill.: Educational Research Bulletin, 37, University of Illinois, 1927. 54 p. 25¢.

PAULA, SISTER MARIE. *Shibboleths; Tests in Teaching-efficiency.* New York: Benziger Brothers, 1928. 160 p. $1.75.

Policyholders Service Bureau. *Paying Employees by Check.* New York: Metropolitan Life Insurance Company, 1927. 19 p. Paper. Apply.

Policyholders Service Bureau. *The Use of Research in Sales Analysis.* New York: Metropolitan Life Insurance Company, 1928. 16 p. Apply.

REESE, WEBSTER P. *Personality and Suc-*

*cess in Teaching.* Boston, Mass.: Richard G. Badger, 100 Charles Street, 1928. 145 p. $1.75.

REYNOLDS, ORA EDGAR. *The Social and Economic Status of College Students.* New York: Teachers College, Columbia University, 1927. 62 p. $1.50.

RICHARDSON, DR. R. A. *Why Few Succeed and Many Fail.* Kansas City, Mo.: Eyesight & Health Ass'n, Box 375, 1927. 200 p. $2.50.

RODGER, ESCA G. *Careers.* New York: D. Appleton and Company, 1928. 187 p. $1.50.

RUCKMICK, CHRISTIAN ALBAN. *The Mental Life; a Survey of Modern Experimental Psychology.* New York: Longmans, Green and Company, 1928. 262 p. $2.00.

SMITH, A. V. *A Comparative Study of Certain Tests of Achievement in High School Chemistry.* Washington, D. C.: Catholic Educational Press, 1927. 45 p. 35¢.

SMITH, ELLIOTT DUNLAP. *Psychology for Executives; a Study of Human Nature in Industry.* New York: Harper and Brothers, 1928. 274 p. $3.50.

SMITH, WALTER ROBINSON. *Principles of Educational Sociology.* Boston: Houghton Mifflin Co., 4 Park Street, 1928. 791 p. $3.00.

SPICER, ROBERT S. *British Engineering Wages.* New York: Longmans, Green and Company, 1928. 159 p. $4.00.

STOKE, STUART M. *Occupational Groups and Child Development.* Cambridge, Mass.: Harvard University Press, 1927. 92 p. Paper. $1.00.

TEETER, VERL A. *A Syllabus on Vocational Guidance.* New York: Macmillan Company, 1928. 229 p. $1.00.

THOM, DOUGLAS ARMOUR. *The Mental Health of the Child.* Cambridge, Mass.: Harvard University Press, 1928. 46 p. $1.00.

THORP, WILLARD LONG. *Economic Institutions.* New York: Macmillan Company, 1928. 306 p. $1.50.

THOULESS, ROBERT H. *The Control of the Mind.* Garden City, N. Y.: Doubleday, Doran, 1928. 211 p. $2.50.

WALSH, JAMES JOSEPH, M.D. *Laughter and Health.* New York: D. Appleton and Company, 1928. 208 p. $1.50.

WELD, H. P. *Psychology as Science: Its Problems and Points of View.* New York: Henry Holt and Company, 1928. 308 p. $2.50.

WESTENBERGER, EDWARD J. *A Study of the Influence of Physical Defects upon Intelligence.* Washington, D. C.: Catholic Educational Press, 1927. 53 p. Apply.

WIECKING, ANNA M. *Education Through Manual Activities.* Boston: Ginn and Company, 15 Ashburton Pl., 1928. 375 p. $1.80.

WILE, FREDERIC WILLIAM, ed. *A Century of Industrial Progress;* foreword by Herbert Hoover. Garden City, N. Y.: Doubleday, Doran, 1928. 606 p. $5.00.

# News Notes

PERSONNEL RESEARCH FEDERATION

ACTIVITIES OF MEMBER ORGANIZATIONS

*American Telephone and Telegraph Company Studies Careers of College Men*

The significant data on scholarship and business success of 3800 college graduates, presented in part last year before the Personnel Research Federation by General Robert I. Rees, have been incorporated with the results of other valuable personnel studies in an article by President Walter S. Gifford in Harper's Magazine for May. It is entitled, "Does Business Want Scholars?"

The results of these extensive personnel researches led the New York Times to comment editorially as follows: "The popular notion that there is no direct relationship between high scholarship and business success has been discredited by the results of a study undertaken within the personnel of the Bell Telephone Company. These results are presented in an article in the May Harper's Magazine by Mr. Walter S. Gifford, President of the American Telephone and Telegraph Company, with convincing graphs. They do not compare the successes of college and non-college men in business, but of college men among themselves. Reference is made to the 'amazing showing' of Phi Beta Kappa men in 'Who's Who' in proportion to their numbers, but these include few men in business. The relative success in the law and medicine of men who stood high in their student days is also well established. But the impression has prevailed that higher 'expectation' of success on the part of higher scholarship does not extend to business, though this 'flies counter to the general theory of the educators.' Mr. Gifford's findings in his field are on the side of the educators.

"To be sure, they deal with averages just as actuarial statistics do in estimating the 'expectation' of life for the individual. A high-stand scholar may miserably fail and a low-stand scholar may notably succeed, but, taking the averages, the men in the first tenth of their respective classes began in about five years to earn more than the other college men and continued to increase their advantage as the years went on. This was true, though not quite to the same degree, of men in the first third of the classes, whereas the men in the lowest third earned least and the longer they were in business the slower their earnings rose. From this it is deducted that a man in the highest tenth in scholarship at college has two chances in ten of standing in the highest ten in salary as compared with the one chance in twenty-two which the man in the lowest tenth has."

"Mr. Gifford's answer to the question put by the President of Reed College, 'Should a student study?' is that, at any rate in his field of business, it is advantageous for a student to have studied. And this is purely upon the basis of earnings. If other factors, such as the ability to make higher use of leisure time, are included, the men in business who have trained 'the muscle of their brains' in youth have still greater relative advantage. Mr. Gifford's charts, enlarged, would be stimulating adornments for the walls of college class rooms."

*Syracuse University*

*School of Citizenship and Public Affairs*

The following is a report submitted by Dean Mosher and Dr. Floyd Allport concerning recent personnel activities of the School of Citizenship and Public Affairs of Syracuse University.

*Tests.* One of the purposes of the School of Citizenship and Public Affairs is to equip college students with the information necessary to participate intelligently in the

affairs, civic and social, of the community in which they may later settle. A purpose related to this is to give them such a stimulus that they will be impelled to participate. In the thought that it ought to be possible to measure the success of the methods used by a test more or less objective in nature, experiments have been going on just recently looking toward the development of suitable tests.

It is proposed to give students taking courses under the auspices of the School a test at the beginning of their freshman year for the purpose of discovering just where they stand with reference to political and public interests. The same group of students will be tested in their senior year, particularly those who have continued work in courses given by the faculty of the School. It is then our intention to circularize the same group with questionnaires three or four years after they have been graduated from college. This will enable one to estimate the changes that may have taken place in attitudes and interests during the four-year course, and also to relate the behavior of the identic group of students to their earlier opinions and attitudes.

It is also our intention to make use of a control group, the members of which do not come in contact with the courses in government and other social sciences. The same test will be applied and at the same intervals. By this means it is anticipated that valid conclusions may be drawn concerning the effectiveness of the courses given in the special curriculum of the School.

It may be interesting to note that the third questionnaire, or the public behavior questionnaire, was circulated among students who had courses in government, and among a similarly large control group of those who had not from among the graduates of 1920–1925. The returns indicate that students who had had work in the department of political science were more inclined to take an active part in public and civic affairs than those who had not.

*Interview Form.* Dr. Iva L. Peters, the Dean of Women, has developed an interview form for women that has been used with over 500 students. Much of the material that is collected by means of this form will be transferred to permanent contact cards to be used throughout the career of the student.

*Specialized Advisors.* Plans are under way for the organization of a group of specialized advisors. Such advisors are recruited from the administrative offices of the staff of the Dean of Women. In the expansion of this staff it is anticipated that the next appointment will be of a mental hygienist.

*Public Personnel Administration.* William E. Mosher is engaged in writing a book on *Public Personnel Administration.* The aim is to apply modern principles of personnel control to the more or less peculiar conditions met with in government employment. Illustrations of progressive practices are taken from jurisdiction both in this country and abroad.

An introductory chapter in the proposed work deals with the total number of public employees, the actual amount of their salaries and the percentage that this amount constitutes of the total operating expenditures of governmental units. The compilation of these data has been going on for something over a year. Accurate estimates have been secured from the federal government, most of the states and most of the large cities. The chief difficulty is in securing information from the smaller units such as the small cities, towns, villages, and the county governments. For the most part, the data for these smaller jurisdictions will have to be handled on a sampling basis. Through the coöperation of research organizations, and professors of political science scattered here and there throughout the country, it has been possible to cover a considerable number of sample units in practically all the states in the union.

It is anticipated that the estimate resulting from this compilation will be more accurate than the estimate heretofore made concerning the number of those working for governmental units of various sorts.

*Reaction Study.* The work on the Syracuse University Reaction Study, a measurement of student attitudes at Syracuse, is approaching completion. A number of facts of interest from the standpoint of college administration and academic personnel are coming to light through the cross

comparisons of distribution upon different items. There seem, for example, to be characteristic attitudes upon a number of subjects held by people who belong to fraternities as distinguished from non-fraternity students; by students who confess cribbing from non-cribbers; by students who stress the scholarly side of college activities as distinguished from those putting the greatest weight upon extra-curricular and social activities. It is hoped that a report of this investigation will be ready for publication in the fall of 1928.

*Attitudes of Workers Toward Organizations.* An investigation is being started upon the attitudes of industrial workers toward the particular type of organization under which they work. In particular, the structural or institutional attitudes of employees in privately owned industries will be contrasted with those in similar situations in industries under public ownership. A situation will be sought where these attitudes can be investigated "in process of transition from one type of ownership to the other. This study has particular bearing upon the question of public ownership of water power now under discussion in New York State.

*Community Organization Study.* Another investigation is under way with regard to community organization and group life as seen from the standpoint of the psychologist in contrast to that of the sociologist. A study will be made of the attitudes, feelings, etc., of each person in a certain rural town. From these individual attitudes concerning the significance and value of their various social contacts and institutions, an account drawn in psychological terms may be produced of the social organization and groupings of that community. This approach differs from the usual social science method of investigating the community by group and institutional centers rather than through separate individuals.

### *University of Pittsburgh*

### *Division of Research in Higher Education*

The Division of Research in Higher Education, although organized primarily for research on problems of importance to the University of Pittsburgh, is also a teaching organization in which competent graduate students have the opportunity to work on university problems of interest to them. The Division, which is an integral part of the Office of the Executive Secretary of the University, is well situated to study such problems as admission of students, guidance after admission, failure of students, orientation courses, marking systems, prediction of success in college, place and function of the junior college, honors courses, and other methods of providing for individual differences, as well as problems of university organization and control. Investigations of such problems have been under way since 1926, under the general oversight of Professor Walter B. Jones.

The Seminar during the first semester of each year is devoted primarily to educational personnel problems; the second semester emphasizes administrative problems. The course aims to make a critical study of important problems of organization and control in the field of higher education. Consideration of the development of colleges and universities; current proposals for changes in higher education; accrediting boards; state guidance of higher education; boards of control, their duties and powers; functions and powers of officers and faculty; financial problems; unit costs; teaching loads; university publicity; junior colleges; records; selection and training of teachers will be included in the course.

### CONGRESS OF TECHNOPSYCHOLOGY

### *Second Announcement*

The Fifth International Conference of Psychotechnics applied to Scientific Management and to Vocational Guidance will be held in Utrecht, Holland, September 10th to 14th, 1928.

Dr. M. S. Viteles, of Philadelphia, will open the symposium on *Accidents.* He will be followed by Dr. J. M. Lahy, of Paris, and Dr. K. Marbe, of Würzburg on the same subject.

Other symposia will be introduced by those whose names appear after the subjects here mentioned: *Temperament and Character*—Bogen, Berlin; Burt, London;

Mira, Barcelona: *Educability*—Myers, London; Peters, Jena; Sirkin, Kharkoff.

Besides these the following persons have already expressed their intention to lecture on some special subject:

Mrs. Fejgin-Gartensteinl, Lüblin; and Messrs. Carrard, Zürich; Deuchler, Hamburg; Diakonow, Moscow; Gudaitis, Kowno; Henning, Danzig; Herwig, Braunschweig; Heuyer, Paris; E. Stern, Giessen; Suter, Zürich; Wreschner, Zürich.

For further information, address the Secretary, Dr. J. E. de Quay, Psychological Laboratory, Wittevrouwenstraat 9, Utrecht, Holland.

### CONGRESS OF THE I. R. I.

The first triennial Congress of the International Association for the Study and Improvement of Human Relations and Conditions in Industry (I. R. I.) will be held during the Summer of 1928 at Girton College, Cambridge, England, from June 28th to July 3rd.

The subject of the Congress will be: "The Fundamental Relationships Between All Sections of the Industrial Community." In choosing this subject for its first Congress, the Association was guided by a desire to search for and define the natural elements composing each section, to promote within the industrial world a fuller knowledge of their relative value and to awaken a greater consciousness of their underlying unity.

Reports will be received from more than twenty countries. A report on "Development of Fundamental Relations Within Industry in the United States" has been prepared by a group of specialists under the chairmanship of Mr. G. A. Bowers, Director of Research of Industrial Relations Counsellors, Inc. Dr. H. S. Person, of the Taylor Society, has written a section on Scientific Management. Dr. W. V. Bingham, of the Personnel Research Federation, has dealt with Industrial Psychology and its influence on conditions and relations in American industry. Dr. C. R. Mann, of the American Council on Education, has treated of Education and Industry. The report on Trends in Personnel Administration has been prepared jointly by Dr. W. J. Donald and Edith King Donald of the American Management Association. The Labor Movement has been surveyed by Miss Florence C. Thorne, of the American Federation of Labor. Mr. Bowers has prepared the summary report and also contributed a section on Social and Economic Background in the United States.

These papers, together with the reports from other countries, are being printed in full by the I. R. I. They will constitute a valuable survey of fundamental conditions and tendencies in industrial relations throughout Europe and America.

The Congress will be open to members and persons introduced by members. Persons desiring to receive a copy of the program containing all particulars, together with information about the published reports, should communicate with the Secretariat of the I. R. I., Javastraat 66, The Hague, Holland.

### FIRST RUSSIAN CONFERENCE ON TECHNO-PSYCHOLOGY

[The Editors are indebted to Dr. D. L. Zyve, recently of Stanford University, for the following account.]

The first Federal Conference on Psychophysiology of Labor and Vocational Guidance took place from May 29th to June 3rd, 1927, during the writer's sojourn in Moscow. About one hundred reports were presented by men and women from all parts of the Republic. The subjects treated covered a wide range, varying from the prognostic value of intelligence tests to the significance of automatisms in military art as related to the behavior of the fighter. They have been summarized in a volume[1] recently received by the Personnel Research Federation.

Vocational psychology, in the broader sense of the term, is assuming a rapidly growing importance in Eastern Europe. Its development is especially marked in Russia, where the pressing task of reconstruction requires an army of skilled labor, and where large numbers of mechanics, electricians, agriculturists, accountants, teachers, etc.,

[1] Tezisy Dokladov: Izd. Orgburo Konferencji. Moskva, 1927.

have to be trained in a relatively short time. Unemployment and the steady increase in the numbers of candidates for positions in various fields of endeavor under the control of the government have forced the Soviet authorities to adopt increasingly rigid methods of selection.

"Rationalization" of every phase of Russian life and the "Scientific Organization of Work" have also received thorough attention of techno-psychologists, economists, and educators. The creation of the "International Association of Psychology and Techno-Psychology" has further stimulated the enthusiasm for techno-psychological research in Soviet Russia. For the time being, however, the function of techno-psychology in Russia is mainly limited to vocational guidance and personnel problems. In this respect most of the work is being contributed by Moscow and Leningrad.

The realization of the potency and timeliness of these problems has drawn into the field of techno-psychology many former general psychologists, physicians and physiologists. Among the latter stand out the schools of Pavlov and Bekhtereff.

The Conference last summer was divided into general and sectional meetings. The latter were grouped into five sections:

1. Methods of Mental Testing;
2. Techno-psychology of Vocations (The Russians call it "Professiography");
3. Vocational Guidance and Selection;
4. Fatigue, Exercise, and Rationalization of Labor;
5. Physiology of Labor.

Among the reports made at the general meetings were those by Professor I. N. Spielrein, of the Institute of Experimental Psychology, First Moscow University, on the "Fundamental Problems and the Present Status of Techno-Psychology," in which he outlined the development of, and the needs for, techno-psychological research in Soviet Russia.

I. V. Karpoff, of the Pedological Research Bureau in Kieff, reported on "School Promotion, based upon Rational and Systematic use of Intelligence Tests." According to his thesis, intelligence tests should be used from kindergarten through the elementary grades for grouping purposes only, while in secondary and higher institutions, they may be used for admission and selective purposes. The new trend may be sensed in the resolution adopted in 1925 by the Ukrainian Conference on Scientific Organization of Work in Universities to the effect that intelligence or aptitude tests be adopted "in order to raise the standards of these institutions." However, there are many, even among the techno-psychologists, who believe that intelligence tests should not be allowed to take the place of specific examinations.

Karpoff also reported an interesting experiment in educational counselling carried out in 1927 in a number of factories. Workers in all the larger metal works of the region were given intelligence and vocational tests, on the basis of which each working man was advised whether he ought to proceed with his education in an institution of higher learning.

Clark and Kushinnikov (Griboyedoff Institute for Child Study—Leningrad) described the methods used by the Bureau of Vocational Guidance and Techno-psychology at the Institute for Child Study in order to acquaint the public school children with various vocations, by means of systematized lectures, excursions to various industrial or commercial establishments, exhibits, etc. Instead of definite vocational tests, they used tests of central, receptor and motor functions such as the concentration test, coördination of hand movements, visual acuity, etc.

Rabinowitch of Leningrad Institute for the Study of the Brain reported on vocational group tests applied to candidates in Russian factory schools. Professor I. P. Froloff of the Central Psycho-physiological Laboratory R K K A, Moscow, reported on "Behavior of the Fighter and Importance of Automatisms in Military Art."

Much more animated were the group meetings. The discussions in the United States on general *versus* special intelligence here found their echo. It was quite apparent that the Russians study with keen interest the developments in the field of techno-psychology abroad, and especially in the United States. The names of Terman,

Thorndike, Spearman, Kelley, Bingham, Thurstone, Chapman, Toops and many others were mentioned in connection with various tests or statistical procedure.

Mr. A. K. Borsuk of the Techno-psychological Bureau of the Leningrad Child Health Department, discussing the vocational guidance of secondary school pupils, stated that his study of vocational or educational choices made by secondary school pupils showed on their part "chaotic, unstable, unorganized and unsufficiently thought over inclinations, changing with accidental circumstances."

According to S. I. Fedoroff (Institute for the Study of the Brain, Leningrad) tests based upon the ability of the individual to form correct generalizations are of basic importance from the point of view of educational guidance.

I. N. Spielrein, speaking of the "Fundamental Problem of Techno-psychology," stressed the importance of the study of relationships between the intelligence and specific vocational aptitudes.

It was the opinion of V. Exemplarsky (Moscow), that the principle of complex investigation of special intelligence or vocational aptitude, if carried to its logical conclusion, would lead to the elimination of psychological examinations as such. Tests built upon type-complexes will have to be replaced by a differential definition of intelligence, based upon "capacities," "functions," or "aptitudes." Such tests would reduce the discrepancies between the practical and purely theoretical investigations of differential psychology.

In the Section on "Vocational Selection," discussions centered around such specific studies as the "Relative Value of Men and Women as Motormen," by I. J. Spiegel, with the conclusion that women perform as well as men. I. V. Karpoff reported on "A Study of Technical Aptitude" in which he compares Thorndike's and Spearman's points of view on general and special intelligence. He discerns two kinds of technical aptitude: the trade-technical or "manipulative" aptitude, and the "techno-intellectual" aptitude. The Experimental Psycho-technical Station of Kieff is stressing the study of the latter. His conclusion is that "general intelligence" is not sufficient for achieving success, either in a technical school or in a technical profession.

In the section on "Exercise, Fatigue, Rationalization of Labor" were presented studies on the "Problem of Fatigue in Techno-psychology" by S. G. Hellerstein; "The Fatigue of Moscow Motormen as Related to the Shift" by I. I. Spiegel; "Results of a Three-year Study on the Mental Fatigue of Children" by I. V. Karpoff; "The Fatigue of Women-weavers with the Intensification of Labor," etc.

The earnestness with which the discussions were conducted, the eagerness of the Russian techno-psychologists to offer and to secure coöperation with their colleagues especially in the United States and Germany, corroborate Dr. W. V. Bingham's impression of the attitude of the Russian psychologists at the meeting of the International Association of Psychology and Techno-Psychology in Paris.[2]

While techno-psychological studies are embracing continually expanding areas in the Soviet Republic, the work is still in its initial stage. However, the numerous reports presented at the conference show clearly that Russian psychologists, in spite of material handicaps, are moving forward with an accelerated pace. The next conference of Russian techno-psychologists, in Leningrad, in 1929, may be looked forward to with well-deserved interest.

### TAYLOR SOCIETY

*Conference on Time Study*

The Taylor Society, in coöperation with the Society of Industrial Engineers and the Society of Time Study Engineers, held a meeting May 7th and 8th in Detroit, Michigan, on the subject of "Time Study."

The range of topics covered is indicated by the following list of titles of the subjects discussed:

Major Characteristics of the Taylor Technique of Time Study.

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[2] W. V. Bingham: The Paris Congress of Techno-psychology. The Personnel Journal, December, 1927.

Study of Fundamental Operations of a Machine vs. Study of Individual Operations.
Unit Times vs. Overall Times.
Classification, Filing and Indexing of Data.
The Relations of Time Study and Motion Study.
Standardization of Conditions and Analysis of Operations.
Selection of Workers for Observation.
Number of Workers to be Observed.
Methods of Observation.
Analysis of Data and Computation of Net Times.
Computation of Allowances.
The Production Study as a Check.

The material presented in the various speeches will be published in full in the Bulletin of the Taylor Society from time to time.

*Industrial Relations Abroad*

At a dinner meeting of the New York Metropolitan Section of the Taylor Society, held May 17th at the Fraternity Clubs, New York, Dr. Ben M. Selekman gave an address on the subject "Recent Trends in Industrial Relations in England and Germany." A full account of the events of the meeting may be obtained upon application to the Taylor Society, 29 West 39th Street, New York.

CONFERENCE ON GUIDANCE AND PERSONNEL

A joint meeting of the New York and Philadelphia Vocational Guidance Associations, in coöperation with the National Conference on Education at Teachers College, Columbia University, was held April 10th and 11th at Teachers College.

The three chief addresses were those by Dr. John M. Brewer, *Harvard University*, Dr. Morris S. Viteles, *University of Pennsylvania*, and Dr. Ben Wood, *Columbia University*. The topics of these addresses were respectively, "The Task of Vocational Guidance," "A Clinical Approach to Vocational Guidance," and "Cumulative Records as Aids in Personnel Adjustment."

An additional feature of the program was reports of Research in Guidance and Personnel carried on at Teachers College, as follows: "Studies in the Placement of Teachers," by Virginia Peeler; "A Personnel Investigation of Officers in the Army and Navy," by Roy N. Anderson; "A Personnel Investigation of Executives in Life Insurance Companies," by Harry A. Hopf; "Investigation of the Guidance being done in the Y. M. C. A. of New York City," by Jerome H. Bentley; and "Investigating the Value of Tests in Vocational Guidance," by Dr. Edward L. Thorndike.

Dr. Thorndike reported an investigation which was begun in 1922 and is still continuing. By the generosity of the Commonwealth Fund the Institute of Educational Research was enabled to test two thousand children when they were approximately 14 years old, with various psychological tests. As far as possible, each of these children has been followed in his school career and in his industrial career if he has left school. It is expected that these educational and vocational histories will be continued for five years more. We shall then have a body of information concerning the educational and industrial careers of young people which will be of value in many ways. First of all, it will enable us to know what value early tests, and early vocational guidance based upon tests, really have. In the second place, it will enable us to know what the significance of a school record is for industrial life in the case of an absolutely fair sampling of the school population. Investigations made hitherto have commonly compared children who attended high school, let us say, with children who left school earlier. In such cases, the children who remained longer are commonly a superior group, and would have done better in the world regardless of the amount of schooling which they had. In the third place, these studies will give useful records of change of occupation and of the significance of the first year or two of work for an individual's later industrial career.

ANTIOCH COLLEGE

*Conference on Problems of College Student Personnel*

A conference on *Problems of College Student Personnel* was held April 6th and

7th at Antioch College, Yellow Springs, Ohio.

The topics discussed were (1) Personality Development, (2) The College Man in Industry, and (3) Educational Frontiers. Among the speakers were Mr. Arthur E. Morgan, *President of Antioch College*, Dr. D. T. Howard, of *Northwestern University*, Mr. Morris E. Leeds, of *The Leeds & Northrup Company, Philadelphia*, and Dr. C. R. Mann, *American Council on Education, Washington, D. C.*

### BOSTON PERSONNEL CONFERENCE

Several members of the Personnel Research Federation were prominent speakers at the Fourth Personnel Conference of the Department of Education and Vocation, of the University Club, Boston, held April 26th and 27th. Among these speakers were Francis F. Bradshaw, of the University of North Carolina; Eva Mooar, of Brown University; Francis Neef, of Dartmouth College, and Kenneth O. Mason, of Brown University.

The four leading topics for discussion at the conference were: (1) The Development of a Definite Program and Standardized Practices in Personnel Work as Related to College Trained Men; (2) What Business Offers to and Expects of the College Trained Man; (3) What a College Trained Man Has to Offer to, and What He Has a Right to Expect of Business and Industry; and (4) Business Versus Cultural Training.

### PERSONNEL INVESTIGATION OF THE PROFESSOR

In the past, the tendency of educational personnel investigations has been to scrutinize the student minutely. In recent issues of educational publications, however, we note a growing tendency to peer, a bit timidly it is true, at the college professor. Unable to lay all the blame for faulty educational results at the door of the student, the critics are focussing the lens of microscopic observation on the teaching staff.

For example, in the February 1928 issue of *School and Society*, two articles appear which direct attention to the professor. President Hall, of the University of Oregon, has written an article entitled *Improving the Teaching at the University of Oregon.* The teaching staff is referred to as the "personnel." Such familiar industrial terms as "selection" and "promotion," "purchasing professional services," and the like, are interspersed throughout the discussion. One gets the impression of a good business man working out efficient methods for the hiring and promotion of his employees.

In contrast to this scrutiny of the professor by the administrator, we have the article by Carroll D. Champlin,—*The Preferred College Professor*—which takes up the critical survey from the point of view of the *student.* This is a report of an investigation of student-faculty relationships made at Pennsylvania State College. In the list of ideal professorial qualities we find mentioned such traits as "being a good fellow in and out of class," "a congenial companion," and "profound understanding of human nature in general." There seems to be here a desire to break down the barrier of the teacher's desk; to climb over the wall of professorial dignity; to create a greater tolerance and understanding between student and teacher. With the thoroughness and frankness of youthful criticism, other qualities are mentioned as ideal, such as, "known to be respectable in his private life," and "an authority in the knowledge of his subject."

Close on the heels of these investigators of the professor is the teaching staff itself. In the March 1928 issue of *Schaol and Society*, C. C. Eckhardt of the University of Colorado reports the results of a faculty self-survey as a means of improving college teaching. The scrutiny is being made in the form of a questionnaire which lists thirty-two points of survey under such headings as "My Professional Attitude and Effort," "My Subject," and "Building for the Future."

With administrator, student, and educator all delving into the task of answering the question of "Who is the best Professor?" we really should gather some valuable data for the use of the future personnel manager of the teaching staff!

SOCIAL SCIENCE RESEARCH COUNCIL

*Appointment of Research Fellows*

The Social Science Research Council has announced the appointment of twenty-one research fellows for 1928–1929 in Anthropology, Human Geography, Political Science, Law, Psychology, Sociology and History.

Among the lines of investigation to be studied, the following will be of interest to those concerned with human relations in industry:

"A Comparative Study of American and European Seagoing Labor in the Twentieth Century, With Special Reference to the Operation of the La Follette Seamen's Act." Elmo Paul Hohman, Northwestern University. Places of study: Leading Ports of Europe and the United States.

"Possible Uses of Psychiatric Methods in the Study of Political Personalities." Harold D. Lasswell, University of Chicago. Place of study: Boston.

"The Psychopathic Personality of the Blind as a Factor in Their Economic Maladjustment." Thomas D. Cutsforth, University of Oregon. Place of study: Boston.

"A Critical Survey of Current Thought and Research on the Psychological Aspects of Labor Unrest and Industrial Morale." Arthur W. Kornhauser, University of Chicago. Place of study: England and Germany.

"Some Effects of the English Social Insurance Acts Upon Pauperism." Helene Leland Witmer, University of Minnesota. Place of study: England.

EFFECT OF DIFFERENT SYSTEMS OF LIGHTING ON FINE WORK

The Medical Research Council (London) announces a report on *The Effect of Different Systems of Lighting on Output and Accuracy in Fine Work (Type-Setting by Hand)*. The report deals with the results of an investigation to discover the system of lighting best calculated to secure the comfort and efficiency of workers engaged in hand composing in letterpress printing. This supplements a previous investigation (issued in October, 1926), the object of which was to discover the amount of illumination desirable to secure these ends.

The results given, taken in conjunction with those in the previous report, indicate the lines upon which an installation should be planned in order to obtain the best results for such work as that carried on in composing rooms. Full-scale trials upon the lines indicated made under ordinary working conditions should have every expectation of success.

The report is published by His Majesty's Stationery Office, London, but may be obtained in the United States by application to The British Library of Information, 44 Whitehall Street, New York.

COMMITTEE ON HEALTH IN INDUSTRY

Industrial mental hygiene has received impetus in the formation of a "Committee on Health in Industry" by the Associated Industries of Massachusetts. The committee was organized as a result of a series of talks on mental hygiene at meetings of the Executive Committee of the organization and before the whole group, by Dr. Elton Mayo and Dr. C. Macfie Campbell of Harvard University, Dr. Henry B. Elkind of the Massachusetts Society for Mental Hygiene, and Dr. V. V. Anderson, formerly of the National Committee for Mental Hygiene. These talks have been published in *Industry*, weekly journal of the Associated Industries of Massachusetts. (Reprinted from *Mental Hygiene Bulletin*, March, 1928.)

SELECTION OF RESEARCH WORKERS

Much interest has been shown by chairmen of boards of fellowship awards, as well as by university officials, in Dr. Toops' article in the April PERSONNEL JOURNAL on "The Selection of Graduate Assistants." The first reaction seems to be an apprehension that the systematic procedures there described for increasing the reliability of predictions of success, are so detailed and technical as to be impractical of use in some situations. The editor asked Dr. Toops how much work is actually involved, and what it costs. He states that for computing the relative standing of twenty-three applicants, from eight to ten hours of

clerical work is necessary. We quote at length from his informing letter:

"It is impossible to give any hard and fast rules in regard to the number of applicants or the number of vacancies one must have before the method would prove profitable. I would guess, however, that in case one has more than five or six applicants, the method would always pay good dividends. I doubt whether the number of vacancies to be filled in any way determines when or when not to use the formula. The additional cost required in computing the applications for twenty-three applicants, or for any number, for that matter, depends largely on the amount of missing information. If some twenty of such items of information are missing, it will frequently take as much time to fill out the missing information as it will to do the entire amount of computation.

"It takes but little more time to write down a score after having read a given recommendation than it would take to read the recommendation alone. Of course, we have at least three people read each set of recommendations and write down the scores. In addition to their work, however, which I assume should always be done when one is using recommendations, from eight to ten hours of clerical work is necessary for scoring for twenty-three applicants.

"We feel that this eight or ten hours of extra clerical labor is very well spent considering the results which we get. If one were doing frequent placement on the basis of this method, a great many of the computations would be reduced to form charts and tables so that the computations could be done in much less time than I have quoted above."

WASTE

Tucked snugly away on the library shelves of each and every educational institution that carries on graduate work in industrial psychology and personnel problems, are quantities of unpublished research material. The university walls jealously guard them for the use of the limited number of students who find their way behind those walls and to those shelves.

It has always seemed an astounding thing that so great an army of students doing research work covers so little ground in any given direction over a given period of time. One answer seems to be in the fact that there is so little coöperation in the research process. The products are helter-skelter bits of research that fit into no plan or scheme for any definite goal. Furthermore, no sign posts have been raised to warn the inexperienced research worker from traveling up blind alleys of research, already explored elsewhere, with the result that Toms, Dicks and Harrys will for many moons to come travel industriously and ineffectively up the same blind alleys.

Not only is the student ignorant of the pieces of ineffective research which have been carried on in the past, but he is also unaware of those studies which it would be tremendously worth while to continue. Many problems have been touched upon that, if carried to their logical conclusions, would lead to real contributions.

The problem is to find better ways to eliminate duplication of useless research, to continue effectual studies, and to initiate research in the right direction toward set goals.

A suggestion we have offered from time to time looks toward the exchange of abstracts of the various unpublished researches contained in the libraries of the various educational institutions. The abstract should state the negative as well as the positive findings, so that real contributions can be readily located and ineffectual methods avoided.

To abstract theses now on file would be an enormous task in some institutions. The University of Wisconsin Library, for example, has in its files over 100 unpublished theses on subjects within the field of industrial relations. But once completed, the exchange of new research work would be comparatively easy. In addition to the direct usefulness of such a service, it would be an incentive for graduate students to turn out real contributions for exchange with other centers.

UNIVERSITY OF IOWA

*Personnel Service*

The development of the Iowa placement examinations and a series of achievement

examinations, the training of men in college personnel work and the administration of all branches of personnel service from the psychological point of view is under the direction of Dr. Stoddard. In this field are found opportunities for apprenticeship and training of personnel officers, such as registrars, deans of men, deans of women, and their assistants.

*Psychology of Business and Industry*

The department of psychology coöperates with the College of Commerce and with the School of Journalism in furnishing courses in the psychology of advertising, of salesmanship, and of industrial personnel. Special research projects develop out of each one of these courses and there are ample opportunities for further study in each field. The work is in charge of Mr. George Horace Gallup of the School of Journalism.

### A PUBLIC CORRELATION SERVICE

A public correlation service, under the direction of Professor Clark L. Hull of the University of Wisconsin, is announced by the National Correlation Bureau. The bureau is equipped with the Hull Automatic Correlation Machine, recently described in scientific journals. The price for computing coefficients of correlation varies with the number of cases and the number of places to which the measures have been worked out. For further information address the bureau at 2305 Rowley Avenue, Madison, Wisconsin.

### VOCATIONAL COUNSELING FOR THE COLLEGE STUDENT

*A Bibliography: Ohio Colleges Association*

One outcome of the conference last October on Personnel Procedures held in Columbus by seventy representatives of the Colleges and Y. M. C. A. organizations of Ohio, was the appointment of a committee to act for the college group until a permanent organization should be formed. One of the tasks imposed upon this committee was the preparation of a list of references for the use of vocational counselors.

The resulting bibliography is divided into two parts. Part I lists sources of information concerning the vocational counseling movement. Part II lists monographs describing the vocations in which college graduates are most apt to find employment.

A limited number of copies of this bibliography (O. C. A. Bulletin, No. 37), sufficient for the needs of the administrative officers of the Ohio Colleges, may be had *gratis* upon application to Herbert A. Toops, Chairman Ohio College Association Committee on Intelligence Tests for Entrance, Ohio State University, Columbus, Ohio. Additional copies, for distribution to students, will be supplied at cost. Correspondence regarding the contents of the bulletin should be addressed to Professor L. D. Hartson, Oberlin College, Oberlin, Ohio.

### OHIO RECOMMENDATION BLANK

Dr. Toops has sent for our exhibit files a copy of the Ohio College Association Bulletin No. 41, "Our New Recommendation Blank," and also a new departmental record form. He states, "It is my belief that the instructor should be provided with all of the personnel information and data which the institution possesses. For it is the instructor who is the worker in charge of changing the raw material into the finished product. The worker should certainly be supplied with the best tools and materials which the factory can afford. It is my hope that ultimately we shall be able to incorporate a somewhat similar record form into a Powers Accounting Machine system for keeping university grades. After these are available, it will be possible at a moment's notice to put a student's card into the printing device and run off a complete record of his entire scholastic career together with various other personnel items which have been collected on him through all of his college course. Not only that, but we shall be able to analyze in minutest detail all of the various personnel items which have been collected at entrance and during the student's subsequent career."

### JOURNAL OF ABSTRACTS IN THE SOCIAL SCIENCES

The Social Science Research Council announces plans to establish a *Journal of Abstracts in the Social Sciences*. These plans are the result of five years' study by a committee of the Council which has canvassed the situation with respect to the needs, resources, and purposes to be served by a comprehensive abstract service in the social sciences.

The Journal will be issued monthly during the year, and in each issue will appear systematic abstracts of new information published in the fields of anthropology, economics, history, political science, psychology, sociology, and statistics for the preceding month or months. It will be published in English in this country, but it will attempt to cover the social science literature of the world as originally published in all languages.

Further details concerning the aims, organization and establishment of *Social Science Abstracts* may be obtained by writing to Dr. F. Stuart Chapin, chairman of the Organizing Committee, University of Minnesota, Minneapolis.

### ARBEITSPHYSIOLOGIE

Arbeitsphysiologie, a new German magazine covering human physiology in work and sport, made its appearance in February, 1928. This journal, published by Julius Springer, Berlin, is edited by an international group of scientists, among whom the English speaking nations are represented by F. G. Benedict of Boston. The magazine will appear at irregular intervals.

### PERSONAL ITEMS

Miss Helen D. Bragdon, who at present is carrying on research in vocational guidance at Harvard University, has been appointed to an assistant professorship at the University of Minnesota.

Dr. C. S. Slocombe of the Federation's staff addressed the annual state conference of the Massachusetts Safety Council on April 30th on the problem of the employee with a high accident record.

On May 10th Dr. W. V. Bingham spoke before the State Personnel Conference at Ann Arbor, Michigan, on *The Worker and His Work*. He also gave an address at the University of Michigan on *Industrial Psychology Here and Abroad*.

Dr. B. V. Moore, Research Associate, discussed the function of placement tests in industry at the Ninth Annual Industrial Conference at Pennsylvania State College on May 25th.

### CHANGES IN JOURNAL

At the request of some of our members, the edges of the pages of the *Personnel Journal* will be trimmed in the future, as they were in Volumes I, II and III.

Also, in order to facilitate reference work, the paging of reprints will be the same as in the original printing in the *Journal*. Heretofore, the reprints have carried their own pagination.

We are always glad to receive suggestions concerning the *Journal* looking towards its betterment.

# Current Periodicals

PREPARED BY LINDA H. MORLEY, *Industrial Relations Counselors, Inc.*

### ABSENTEEISM

WRIGHT, WADE (M.D.; Medical Staff of the Metropolitan Life Insurance Company). *Older workers lose most sick time.* Industrial Psychology, Vol. 3, p. 167. April, 1928.

### BONUS SYSTEM

WOLFF, ED. (Treasurer, Hughes, Wolff & Company, Inc.). *Business slack? pay salesmen more; this company increases salesmen's commissions when business drops and lowers commissions when business picks up.* Printers' Ink, Vol. 142, p. 155, 156, 158, 160. March 29, 1928.

### EDUCATION

ALLEN, CHARLES R. *Mistakes in industrial education the plant can avoid.* Industrial Psychology, Vol. 3, p. 101–103. March, 1928.

Worker education sounds easy, but it may be largely waste if not checked against these vital concepts.

TALBOT, WINTHROP (Consultant in Industrial Relations). *Illiterate workers the highest-cost labor.* Manufacturing Industries, Vol. 15, p. 170–172. March, 1928.

Suggestions on how to reduce needlessly high production costs and excessive accident expense through common education.

WALTERS, J. E. (Director of Personnel, Purdue University). *Description of procedures of the personnel system for the schools of Engineering, Purdue University, Lafayette, Ind.* Journal of Engineering Education, Vol. 18, January, 1928. 42p. Reprint.

### EMPLOYEE REPRESENTATION IN MANAGEMENT

OWEN, ANNIE E. (Messrs. Barrow's Stores Ltd., Birmingham, England). *Council and Committee experience in a Midland retail store.* Welfare Work, Vol. 2, p. 42–43. March, 1928.

Detailed description of the plan of this store.

SCHOMERUS, FRIEDERICK (Head of the Labor Department, Zeiss Works, Jena). *Management sharing in the Carl Zeiss Works.* Industrial Psychology, Vol. 3, p. 59–63. February, 1928.

Here is a remarkable story of industrial coöperation founded on good psychology which has had a quarter century of experience to prove it workable. Translated from the German by Clifford E. Gates.

### EMPLOYMENT—STATISTICS

ROORBACH, G. B. (Professor of Foreign Trade, Harvard University, Cambridge, Mass.). *Capacity of world markets to absorb Europe's products and to afford employment to expanding population.* Proceedings of the Academy of Political Science, Vol. 12, p. 77–95. January, 1928.

Short section on "Capacity to afford employment to expanding populations."

### FATIGUE

*An antitoxin for fatigue?* Industrial Psychology, Vol. 3, p. 115. March, 1928.

Discovery of Dr. Radoceanu of Bucharest.

*Rest pauses for laundry.* Industrial Psychology, Vol. 3, p. 127. March, 1928.

Experience over a period of ten years.

WEINLAND, JAMES D. (Teacher of Psychology, Pratt Institute, Brooklyn). *Some facts about weariness and work.* Industrial Psychology, Vol. 3, p. 108–111. March, 1928.

"That tired feeling" may be misleading but it may also affect quality and output.

FORD MOTOR CO.

FAUROTE, FAY LEONE (N. Y.) *Single-purpose manufacturing.* Factory and Industrial Management, Vol. 74, p. 769–773. April, 1928.
Ford methods described.

FRATERNITIES

*Sigma Iota Epsilon.* Bulletin of the Taylor Society, Vol. 13, p. 53. February, 1928.
A professional honorary fraternity founded at the University of Illinois to foster a greater interest in industrial and business management.

IMAGINATION IN BUSINESS

LAIRD, DONALD. *Controlled imagination.* Executive, Vol. 11, p. 23, 26. February, 1928.
We must work from facts, but there is a place for the poet in big business.

INCENTIVES

BENGE, EUGENE J. (Chief Statistician, Mitten Management, Inc.). *Satisfy his yearnings.* Trained Men, Vol. 8, p. 30–31; 42. Spring, 1928.
Latently, the average worker possesses three or four times the productive capacity he exhibits. His latent forces must be organized before they can emerge productively.

DOWN, CLINTON A. *Compensation plan that gives consideration to quality sales.* Sales Management, March 3, 1928, p. 362–372.

INDEX NUMBERS

FISHER, IRVING (Yale University). *"Total value criterion"; a new principle in index number construction.* Journal of the American Statistical Association. December, 1927, p. 419–441. (Reprint).

INDUSTRIAL RELATIONS

BLOODWORTH, BESS (Personnel Director, A. L. Namm & Son, Brooklyn, N. Y.). *Budgeting personnel expense.* Journal of Retailing, Vol. 3, p. 17–20. April, 1927.

KELLOGG, PAUL U. (Editor of the Survey-Graphic). *Henry Ford's hired men. When mass production stalls.* Survey, Vol. 59, p. 557–596. February 1, 1928; p. 683–686; 722–728. March 1, 1928.
Some inklings as to what the change in cars has meant to them—and to the people of Detroit. Part 1—His employment policy.
A record of lost work-time, lost wages, family and community disorganization caused by the failure of large-scale production to apply to the human factor in production the forethought and intelligence turned upon machines and credit.

Rike-Kumler Store. *Successful budgeting of personnel costs at the Rike-Kumler Store.* Store Operation, February, 1928, p. 7–13.
Personnel Department relies on two reports: store payroll summary and the departmental payroll summary.

Russell Sage Foundation-Library. *Industrial and labor relations; a bibliography.* Bulletin, No. 87. February, 1928. 4 p.

INFORMATION—DISSEMINATION

SUDDARD, THOMAS W. (Secretary, Hamilton Manufacturing Company). *Sharing information with employees improves product and cuts costs.* Manufacturing Industries Vol. 15, p. 91–94. February, 1928.
Improvement and cost reduction followed the introduction of a plan whereby full operating information is given to the employees.

INSURANCE—SOCIAL

PLUMMER, ALFRED. *Some aspects of the history and theory of social insurance.* Economics, No. 20, p. 203–223. June, 1927.

INTERVIEWING

SHELLOW, S. M. *Place of the interview in selection.* Electric Railway Journal, March 3, 1928, p. 368.
Suggests using the interview to supplement tests results.

JOB ANALYSIS

GEISSLER, L. R. *Getting the job onto paper.* Industrial Psychology, Vol. 3, p. 53–58. February, 1928.
Job analysis is strengthened when it is made from the psychological approach. This article tells about one of the first job analyses in the textile industry.

JOINT RELATIONS

GARDINER, GLENN. *When good jobs don't hold men.* Industrial Psychology, Vol. 3, p. 116–120. March, 1928.

The plant itself may be all right but—company policy outside the works has a great deal to do with keeping good men at their jobs in the works.

Imperial Chemical Industries, Ltd. *Imperial Chemical Industries, Ltd. details of labour programme to supplement general statement by Sir Alfred Mond, Friday, 7th October, 1927.* Law and Labor, Vol. 10, p. 71–72.

Provides for: central labour department; works councils; works magazine; staff grade of workers; workers shareholding scheme.

LABOR COST

HOUGH, THOMAS R. (Supervising Industrial Engineer, Wilson and Company). *Remarkable reduction in labor costs.* Manufacturing Industries, Vol. 15, p. 111–114. February, 1928.

How a 24.7 per cent decrease was brought about, while amounts handled per man-hour increased 47.5 per cent, wages increased 21.5 per cent and a net saving of $18,825 was accomplished by installing principles of scientific management in one of the plants of Wilson and Company.

LABOR—LEGISLATION

*Labor legislation of 1927.* Monthly Labor Review, Vol. 26, p. 554–560. March, 1928.

Survey: employment contract, wages, hours of labor, safety and health, labor unions and disputes, pensions, vocational rehabilitation, investigating commissions.

LEWISOHN, SAM A. (President, American Association for Labor Legislation). *Labor legislation and the business mind.* American Labor Legislation Review, Vol. 18, p. 51–60. March, 1928.

LEADERSHIP

BRAMSFELD, E. *Germany trains her engineers for manpower leadership.* Industrial Psychology, Vol. 3, p. 121–122. March, 1928.

German engineering schools seem to take psychological training of engineers very seriously. (Translated from the German by Clifford E. Gates).

DIXON, RONALD F. *New slant on making better supervisors.* Industrial Psychology, Vol. 3, p. 74–76. February, 1928.

Latent group leadership and personal efficiency developed upon the suggestion of the men themselves.

GRAY, WILLIAM R. (Dean, Amos Tuck School of Administration and Finance, Dartmouth College). *Leadership—is it untaught and unteachable?* Management Review, Vol. 17, p. 75–82. March, 1928.

Discussion of the question from the point of view of the college professor.

STEPHENSON, A. (Industrial Psychologist). *Correction or reprimand.* Industrial Psychology, Vol. 3, p. 133–134. March, 1928.

Foremanship point of view commented on.

LIBRARIES—METHODS

*Books for industrial employees.* Adult Education and the Library, Vol. 3, p. 26–27. February, 1928.

Plans of the American Telephone and Telegraph Company, the Western Electric Company and the Southern New England Telephone Company to encourage the use of libraries in adult education.

STALEY, EUGENE (University of Chicago). *Sources for labor historians.* American Federationist, Vol. 35, p. 282–286. March, 1928.

Description of a search for the history of the Illinois State Federation of Labor in the files of the various libraries which specialize in trade union files.

MEDICAL SERVICE

HUTCHINSON, G. S. (Lt. Col.; D. S. O.; M. C.). *Sherwood Colliery sunlight clinic.* Welfare Work, Vol. 2, p. 44–46. March, 1928.

Demonstration of the benefits of light and heat on industrial workers.

KNAPP, ROBERT (M. D., Medical Director, Cheney Brothers, South Manchester, Conn.). *How far should industry go in caring for cases of illness not due to em-*

*ployment?* Journal of Industrial Hygiene, Vol. 10, p. 1–6. January, 1928.

Experience in the Cheney Brothers medical department with preventive medicine.

New York State—Labor Department—Statistics and Information Bureau. *Cost of infections in industry.* Industrial Bulletin, Vol. 7, p. 114–115. January, 1928.

Detailed tables of statistics are given showing: Infected injuries by cause classes, and by location of injury; relative cost of infected and non-infected injuries; infections of hands and fingers, arms, feet and legs, and eyes by chief causes; relative severity of infected injuries of hands and fingers by chief causes.

New York State—Labor Department—Women in Industry Bureau. *Medical service in nineteen department stores.* Industrial Bulletin, Vol. 7, p. 140–141, 160. February, 1928.

New York City and Brooklyn stores studied. Tables show date of inauguration of department; number of employees; number of visits to medical department per year; nurses; physicians; dentists; chiropodists; specialists; equipment.

### MENTAL HYGIENE

Feiss, Richard A. (Management Consultant). *Mental hygiene for management.* Human Factor, Vol. 4, p. 1–2. January-February, 1928.

Address given at the annual meeting of the Massachusetts Society for Mental Hygiene.

*Selected readings in mental hygiene.* Human Factor, Vol. 4, p. 4. January-February, 1928.

Lists general books and also books on Childhood; Adolescence; Feebleminded-ness; Delinquency; and Industry.

### NOISE

*Some irritating noises can be screened away easily.* Industrial Psychology. Vol. 3, p. 107. March, 1928.

Screens made of colotex or hair felt recommended.

### OFFICE WORKERS

Wilcox, Uthai Vencent. *What the office worker thinks about.* Executive, Vol. 2, p. 24; 28. March, 1928.

Results of a questionnaire covering 200 workers in San Francisco, Denver, Chicago, and Washington.

### PAYROLL METHODS

*Service charge—a seamy side.* Burroughs Clearing House, March, 1928, p. 42–52. Payroll service to merchants.

A coöperative plan between a bank and employers, whereby check for total payroll and itemized payroll sheet is sent to bank. Bank then automatically opens accounts and deposits salary to account of each employee.

### PSYCHOLOGY

Bergen, H. B. (Personnel Director, Henry L. Doherty & Co.). *Plant psychologist should be hand-picked.* Industrial Psychology, Vol. 3, p. 166–167. April, 1928.

Stresses the importance of having a "company man" rather than a specialist.

Stern, Erich (Dr. Giessen, Germany). *Berlin is another center of activity.* Industrial Psychology, Vol. 3, p. 122–123. March, 1928.

Brief description of the work of the School for Industrial Psychology at the Berlin Institute of Technology.

Washburn, M. F. *Purposive action.* Science, January 13, 1928. 24 p.

Psychological explanation.

### RATING

Gallup, George H. (University of Iowa). *Personality—a secret of success in retail selling.* Industrial Psychology, Vol. 3, p. 81–87. February, 1928.

Investigators in a department store find a new test of introversion-extroversion and a rating scale help tell how well a sales person can sell.

### RECREATION

Texas—Labor and Statistics Bureau. *Survey of rest and recreational facilities.* In-

dustrial Bulletin, Vol. 1, p. 20–29. February 1, 1928.

Statistics for Texas firms compiled from a study made by the Department.

RECRUITING—EMPLOYEES

Cutler-Hammer Manufacturing Co., Milwaukee. *Advertising as a builder of personnel.* Printers' Ink, Vol. 143, p. 191–192. April 12, 1928.

Editorial.

REHABILITATION

*Placing handicapped workers.* Industrial Psychology, Vol. 3, p. 155. April, 1928.

Work of the Joint Employment Bureau for the Disabled in New York described.

RESEARCH

KETTERING, C. F. (Vice-president, General Motors Corp.). *Research, horse-sense and profits.* Factory and Industrial Management, Vol. 74, p. 735–739. April, 1928.

Description of researches carried on by the General Motors Corporation.

YOUNG, ALLYN A. (Harvard University). *Economics as field of research.* Quarterly Journal of Economics, Vol. 42, p. 1–25. November, 1927.

SAFETY

JOHNSON, THEODORE R. (Personnel Director, United Parcel Service, Los Angeles). *Mental maturity necessary for safe auto operation?* Industrial Psychology, Vol. 3, p. 77–80. February, 1928.

The "accident group" of drivers can be found in the employment office.

MYERS, J. W. (Secretary, Annuities and Benefits Committee, Standard Oil Company, New Jersey). *Accident rate declined in 1927.* Salesmotor, Vol. 9, p. 13–15. January-February, 1928.

Gives charts showing frequency of lost-time accidents by months and frequency rate and per cent increase or decrease of lost-time accidents by branches for the years 1926 and 1927.

Standard Oil Company (Indiana). *Refineries reduce accidents 38 per cent in twelve months as Laramie wins 1927 safety race by making perfect score for fourteen months; Whiting's remarkable record.* Stanolind Record, Vol. 8, p. 31. February, 1928.

Six refineries compared for 1926 and 1927 as to number of full-time workers per month and number of lost-time accidents per 1,000 employees.

STANLEY AND PATTERSON, Inc. *Prizes given for accident prevention work.* Iron Age, Vol. 121, p. 460. February, 16, 1928.

Winner of the metal manufacturers' industrial accident prevention contest conducted by the Merchants Association of New York.

SALESMEN

LEICH, RUTH. *Male or female clerks? a question for many industries to answer.* Printers' Ink, Vol. 142, p. 153–160. March, 22, 1928.

The experiences of the automobile, hardware, cigarette and drug industries with saleswomen.

SCIENTIFIC MANAGEMENT

SRB, JOSEPH. *Bata's-Czecho-Slovakia.* Monthly Report of the National Union of Boot and Shoe Operatives, January, 1928, p. 59–61.

Letter to the General President of the National Union of Boot and Shoe Operatives, Mr. T. F. Richards from Joseph Srb criticizing the labor policies of the Bata Works at Zlin.

URWICK, L. (Hon. Secretary, Management Research Groups, London). *Scientific Management in Great Britain.* Bulletin of the International Committee of Scientific Management, Vol. 2, p. 11–12, September, 1927; p. 50–55. December, 1927.

SELECTION OF EMPLOYEES

VAN NALTS, W. W. (Assistant Secretary, Prudential Insurance Company). *How we fill our jobs.* Office Economist, Vol. 10, p. 5, 13. March, 1928.

Selection of the 6,000 home office employees of the Prudential Insurance Company.

STABILIZATION

*Seasonal fluctuations in employment.* International Labour Review, Vol. 17, p. 349–376. March, 1928.

The present article, which is purely statistical deals with seasonal fluctuations on the labour market considered as a whole. It will be followed by two other articles, one dealing with the clothing trades and one with the building trades.

*Stabilizing employment.* American Labor Legislation Review, Vol. 18, p. 65–93. April, 1928.

Includes articles by: John B. Andrews, Otto T. Mallery, Leo Wolman, Margaret D. Meyer, Norman Lombard and James J. Davis.

STATISTICS—ACCIDENTS

*Aid accident prevention; industrial contests conducted by association bring about reduction of totals.* Greater New York, Vol. 15, p. 13. March 28, 1928.

Two hundred companies in three groups; metals, warehouse, food products.

TESTS

BOOK, W. F. (Dr.) *New findings on sex differences.* Industrial Psychology, Vol. 3, p. 173. April, 1928.

Mental tests for young men and women compared.

FALK, GEORGE K. (Dr.; President of the Hebrew Technical Institute of New York City). *Skeptical about tests.* Industrial Psychology, Vol. 3, p. 129. March, 1928.

Quotation from annual report of the Institute.

KENAGY, H. G. *Intelligence of salesmen.* Industrial Psychology, Vol. 3, p. 128. March, 1928.

Results of tests.

PAYNE, ARTHUR FRANK. *How they test workers in Germany.* Industrial Psychology, Vol. 3, p. 68–73. February, 1928.

A wide variety of psychological tests which American psychologists do not know have been devised for industrial uses in foreign countries.

TRAINING

*Danger of permitting old salesmen to train recruits.* Marketing, February, 1928, p. 122–131.

Results of a questionnaire.

SPAWN, J. NORMAN (Educational Director and Employment Supervisor, Champion Fibre Company). *First, get the worker interested.* Trained Men, Vol. 8, p. 36–38. Spring, 1928.

Training activities of the Champion Fibre Company.

STARR, OSCAR L. (Vice-president, Caterpillar Tractor Company, San Leandro, Cal.). *Making skilled mechanics.* Factory and Industrial Management, Vol. 74, p. 526–529. March, 1928.

Apprentice system of the Caterpillar Tractor Company.

*Training laundry salesmen.* American Outlook, March, 1928, p. 16–23.

Weekly sales meetings for drivers.

TURNOVER

*Personnel activities reduce employee turnover in retail stores.* Bulletin of Business Research, Vol. 3, p. 13–14. March, 1928.

Study made by the College of Commerce and Administration of the Ohio State University.

SPONDER, S. B. (Industrial Engineer, Chicago Flexible Shaft Co.). *How occupational rating increased labor stability and reduced costs.* Manufacturing Industries, Vol. 15, p. 144–145. February, 1928.

Gives an analysis and synthesis of an occupational wage rate.

VACATIONS

*Wage earners' vacations with pay.* Service Letter on Industrial Relations, No. 7, p. 1–2. April 5, 1928.

Survey made by National Industrial Conference Board covering 4,655 companies, summarized.

VOCATIONAL GUIDANCE

BUCHWALD, LEONA C. (Supervisor, Educational and Vocational Guidance Department, Department of Education, Baltimore, Md.) *Vocational help in schools assists Baltimore employers.* Industrial Psychology, Vol. 3, p. 168–171. April, 1928.

Actual cases described to show how the plan works.

WOMEN

United States—Women's Bureau. *Legal status of women workers varies.* Industrial Psychology, Vol. 3, p. 127. March, 1928.

State laws governing women's work summarized.

Westinghouse Lamp Company. *Where women excel men.* Industrial Psychology, Vol. 3, p. 137. March, 1928.

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